City of Prescott
Council Subcommittee on Water Issues

February 4, 2025 | 9:30 AM
201 N Montezuma Street
Council Chambers, 3rd Floor
Prescott, AZ 86301

AGENDA

The following Agenda will be considered by the **Prescott Council Subcommittee on Water Issues at a Regular Subcommittee Meeting** pursuant to the Prescott City Charter, Article II, Section 13. Notice of the meeting is given pursuant to Arizona Revised Statutes, Section 38-431.02. One or more members of the Council may be attending the meeting through the use of a technological device.

Viewing & Participation

This meeting may be viewed on Channel 64, Facebook Live or on the City's website: City of Prescott Live Meeting Feed

Public comments for Council may be submitted through the City website: Public Comment Form

1. **CALL TO ORDER**
2. **ROLL CALL**
3. **DISCUSSION & ACTION ITEMS**

A. Approval of the January 7, 2025 Council Subcommittee on Water Issues Meeting Minutes.
Recommended Action: MOVE to approve the minutes as presented

B. **WSA24-013:** A Water Service Application for 11.66 Acre-feet Per Year Submitted by Michael Taylor Architects, on Behalf of Owner YH Development Properties, LLC. Location: APN 109-13-001D, 500 S Marina St., 8 Parcels Comprising 3.5 Acres, in T13N, R02W, Section 04, SE 1/4.
Recommended Action: MOVE to recommend forwarding WSA24-013 to Council for approval or denial

C. Presentation & Discussion Regarding a Potential Memorandum of Understanding (MOU) with The Nature Conservancy.
Recommended Action: MOVE to recommend forwarding the MOU to Council for approval

D. Presentation & Discussion Regarding Northern Arizona Municipal Water Users Association (NAMWUA).
Recommended Action: This item is for discussion only. No formal action will be taken.

E. Presentation & Discussion Regarding Water Service Applications and Potential Water Policy Updates.

Recommended Action: This item is for discussion only. No formal action will be taken.

F. 2022 Water Management Policy Discussion - Current Residential & Non-Residential Water Budget Overview for January 1, 2025 through January 24, 2025.
Recommended Action: This item is for discussion only. No formal action will be taken.

4. GENERAL ANNOUNCEMENTS FROM STAFF

5. ADJOURNMENT

Upon a public majority vote of a quorum of the City Council, the Council may hold an executive session, which will not be open to the public, regarding any item listed on the agenda but only for the following purposes:
(1) Discussion or consideration of personnel matters (A.R.S. §38-431.03(A)(1));
(2) Discussion or consideration of records exempt by law (A.R.S. §38-431.03(A)(2));
(3) Discussion or consultation for legal advice with the city's attorneys (A.R.S. §38-431.03(A)(3));
(4) Discussion or consultation with the city's attorneys regarding the city's position regarding contracts that are the subject of negotiations, in pending or contemplated litigation, or in settlement discussions conducted in order to avoid litigation (A.R.S. § 38-431.03(A)(4));
(5) Discussion or consultation with designated representatives of the city to consider its position and instruct its representatives regarding negotiations with employee organizations (A.R.S. §38-431.03(A)(5));
(6) Discussion, consultation or consideration for negotiations by the city or its designated representatives with members of a tribal council, or its designated representatives, of an Indian reservation located within or adjacent to the city (A.R.S. §38-431.03(A)(6));
(7) Discussion or consultation with designated representatives of the city to consider its position and instruct its representatives regarding negotiations for the purchase, sale or lease of real property (A.R.S. §38-431.03(A)(7)).

CERTIFICATION OF POSTING OF NOTICE
The undersigned hereby certifies that a copy of the foregoing notice was duly posted at Prescott City Hall on 1/30/25 at 12:00 p.m. in accordance with the statement filed by the Prescott City Council with the City Clerk.

Sarah M. Siep
Sarah M. Siep, City Clerk

TO:	MAYOR AND CITY COUNCIL
AGENDA:	February 4 Subcommittee on Water Issues
DATE:	February 4, 2025
DEPT:	City Clerk
ITEM #:	3.A
SUBJECT:	Approval of the January 7, 2025 Council Subcommittee on Water Issues Meeting Minutes.

ITEM SUMMARY

This item is for the approval of the minutes from the January 7, 2025 Council Subcommittee on Water Issues meeting. Staff recommends approval of the minutes as presented.

BACKGROUND

None.

FINANCIAL IMPACT

None.

RECOMMENDED ACTION

MOVE to approve the minutes as presented

ATTACHMENTS

1. January 7, 2025 WIS Minutes

CITY OF PRESCOTT

City of Prescott
Council Subcommittee on Water Issues

January 7, 2025 | 9:30 AM
201 N Montezuma Street
Council Chambers, 3rd Floor
Prescott, AZ 86301

MINUTES

1. CALL TO ORDER

Chairperson Rusing called the meeting to order at 9:32 a.m.

2. ROLL CALL

Cathey Rusing, Chairperson
Lois Fruhwirth, Member (Excused)
Ted Gambogi, Member

3. DISCUSSION & ACTION ITEMS

A. Approval of the November 12, 2024 Council Subcommittee on Water Issues Meeting Minutes.

MOTION BY MEMBER GAMBOGI TO APPROVE THE NOVEMBER 12, 2024 MINUTES; SECONDED BY CHAIRPERSON RUSING: PASSED (2 - 0)

B. **WSA24-052:** A Water Service Application Submitted by Ikon.5 Architects, on Behalf of Owner, Embry-Riddle Aeronautical University. Location: APN 106-03-004, Comprising 240 Acres, Requesting 11.33 Acre-ft/Year.

Brian Ruiz Water Resources and Environmental Services Manager presented a water service application from Embry-Riddle Aeronautical University for their proposed new Student Union building. The project will replace five existing buildings on campus. A demand analysis by Dible Engineering calculated the water usage for the new building and landscaping. The new building is expected to use 9 acre-feet of water per year, with an additional 1.55 acres of landscaping requiring 1.5 acre-feet per acre annually. The total estimated water usage for the project is 11.33 acre-feet per year. Embry Riddle confirmed they are working with a landscape architect to comply with the Arizona Department of Water Resources (ADWR) planting guidelines.

Chairperson Rusing asked what the usage amount was for the five buildings that the Student Union will replace and commented that the new building will be a wonderful asset to the campus.

Brad Sinn, Director of Facilities for Embry Riddle added that he believes the net water use will be less than the current usage amount. The new building will house food service, offices and restrooms.

MOTION BY MEMBER GAMBOGI TO FORWARD WSA24-052 TO COUNCIL FOR APPROVAL; SECONDED BY CHAIRPERSON RUSING: PASSED (2 - 0)

C. Presentation & Discussion Regarding the Amended 2022 Water Management Policy - Current Residential & Non-Residential Water Budget Overview for July 1, 2024 through December 19, 2024.

Mr. Ruiz provided the presentation for the water budget allocation. Under the amended 2022 water policy guidelines, semi-annual water budgets are established for residential and non-residential projects. For the period from July 1, 2024, to December 31, 2024, the residential water budget was set at 50 AFY (acre-feet per year), and the non-residential budget at 25 AFY.

Residential Projects:

- Five projects were allocated water during this period:
  - Four were administratively approved as they were below the required threshold.
  - One project, the Lafferty Apartments (82-unit multifamily housing), was recommended by the Subcommittee and approved by the Council. This project may qualify as workforce housing.
- Total water usage for these residential projects: 11.49 acre-feet, leaving 38.51 acre-feet of unused water in the residential budget.
- Note: An Embry-Riddle student residence project, requiring 34 acre-feet of water, was delayed and will be addressed at the January 14th meeting. It would not have impacted the residential budget, as it qualifies for an appeal.

Non-Residential Projects:

- Five projects utilized water:
  - Three were administratively approved.
  - Two were reviewed by the Subcommittee and approved by the Council.
- Total water usage for these non-residential projects: 4.54 acre-feet, leaving 20.46 acre-feet in the non-residential budget.

This summary reflects a balanced water allocation, with substantial unused capacity in both categories during the specified period.

Chairperson Rusing thanked staff, Veterans Affairs (VA) and the county for working together on the project for homeless veterans to get them on the VA campus for proper care in a safe place.

D. Presentation & Discussion Regarding an Overview of the 2024 Yearly Water Budget.

Mr. Ruiz provided a review of the water allocations granted to residential and non-residential projects within the city's water service area for the 2024 calendar year. 22.55 AFY was allocated to non-residential projects and 42.94 was allocated to residential projects for an annual total of 98 AFY. The residential water allocations consisted of 20.58 AFY over 73 single family residences and 22.36 AFY over 6 multi-family projects totaling 79 total requests. The non-

residential allocations consisted of hotel 3.6 AFY, restaurant/bar 7.53 AFY, retail/office 1.2 AFY, services .5 AFY, industrial 3.07 AFY and storage/other 6.65 AFY.

Chairperson Rusing asked what hotel was included in the 2024 non-residential water calculations.

Mr. Ruiz responded that it was the upcoming hotel located near the mall.

Chairperson Rusing commented that the city provides water to the tribe and asked where that water is shown.

Mr. Ruiz reiterated that the information is only referencing new water applications.

Chairperson Rusing commented that water allocation for new projects in 2024 is lower than in 2023, while maintaining commitments to existing contracts, which account for approximately 50% of the total water allocated. She highlighted that a significant portion of the water is supplied to areas outside city limits, mentioning projects like Stringfield Ranch, Mountain Club, Wildwood, Kingswood, and another subdivision along Iron Springs Road.

E. Presentation & Review Regarding the Calendar Year 2024 Water Conservation Rebate Program.

Tracie Beasley, Water Resources Project Manager, provided an overview of the results from calendar year 2024 of the water conservation rebate program available to citizens. Rebates that were offered in 2024 were for: toilets/commercial urinals, ultra-efficient washing machines, turf removal, rainwater cisterns, rain gardens, WaterSense smart irrigation timers, hot water recirculation systems and septic system incentive. She reviewed that each rebate option provided water savings, except the rain gardens since no one has taken advantage of that option.

Member Gambogi asked for a description of a rain garden.

Ms. Beasley explained that rain gardens are designed to capture rainwater, often directed from buildings to the ground. These gardens temporarily hold water, allowing it to absorb into the soil, which helps prevent runoff and replenish groundwater systems. They are particularly useful in areas without infrastructure and during heavy rains, such as the monsoon season. In desert regions, rain gardens may resemble dry landscaping with native plants but can also feature lush vegetation that enhances their aesthetic appeal.

Chairperson Rusing added that she has a hot water recirculation pump at her home and it is wonderful and she saves a lot of water with it.

Ms. Beasley continued that as of December 19, 217 applications for 285 rebates were received, $49,920 was rebated to citizens and 2,107,825 gallons of water saved annually. She added that 20 more applications were received in the last few weeks of 2024.

Chairperson Rusing asked how the citizens are responding to the rebate opportunities.

Ms. Beasly responded that she has had a handful of conversations since she started in October and feels the citizens are excited and curious for the opportunities.

Chairperson Rusing added that she did some quick calculations, and the total gallons translated to 6.5 AFY of water saved.

Ms. Beasly added that there are plans in the works to improve the water conservation and education efforts in 2025 and shared some of the preliminary details.

F. Presentation & Discussion Regarding the Automated Metering Infrastructure (AMI) Project.

Steve Olfers, Utilities Manager, introduced the item and added that they are nine months into the project.

Nathan Graham, Water Operations Superintendent, continued the presentation and provided details on the progress of the program.

Goal is to replace all water meters with Badger meters-
- Approximately 25,800 total meters
  - Replace drive-by read endpoints with Orion Cellular endpoints
- Using cellular system to communicate and read meters
  - Develop front-facing application for customers (EyeOnWater)
- To view and adjust their usage
- Set up alarms in case of a leak or other unexpected usage
- 427 customers currently registered

Progression of Installation-
- Official project kickoff: March 15, 2024
- Started in the Chino Valley service area
- Currently in Route 4 Thumb Butte area
  - 4,498 meters to be replaced
  - Approx. 50% complete
- A total of 4739 have been replaced (Dec 12)
- Replacing at a rate of 600 meters per month
- Planning to be complete in 2028

Chairperson Rusing asked what happens if a citizen does not want the new meter.

Mr. Graham explained the water meters are city property and they have some educational literature that can be provided to the water user.

Ms. Beasly stated she is available to help the public set up their EyeOnWater app

and learn how to use the information to save water.

Ms. Beasley shared plans to collaborate with the water team to educate the public on how to use smart meter information for water conservation. The goal is to make it easier for people to access resources, ask questions about water usage, and learn about conservation strategies, such as landscape rebates and home water audits. She is establishing "water conservation office hours," where she will meet with the public at different locations to provide assistance. The initiative will also involve helping people set up smart meter apps and alerts. Additionally, Ms. Beasley plans to work with the library and water team to offer educational presentations once there are enough smart meter users.

4. GENERAL ANNOUNCEMENTS FROM STAFF

Chairperson Rusing announced there is a CWAG (Citizens Water Advisory Group) meeting coming up and to visit their website. Also, she encouraged attendance at a letter-writing workshop to oppose mining near the Hassayampa River Headwaters. She stressed the importance of watershed protection, the Bradshaw Mountains' role in aquifer recharge, and ongoing drought conditions and urged water conservation and fire awareness during the unusually dry winter.

5. ADJOURNMENT

Chairperson Rusing adjourned the meeting at 10:39 a.m.

_____

Cathey Rusing, Chairperson

ATTEST:

_____

Torey Dawson, Deputy City Clerk

TO:	MAYOR AND CITY COUNCIL
AGENDA:	February 4 Subcommittee on Water Issues
DATE:	February 4, 2025
DEPT:	Public Works
ITEM #:	3.B
SUBJECT:	**WSA24-013:** A Water Service Application for 11.66 Acre-feet Per Year Submitted by Michael Taylor Architects, on Behalf of Owner YH Development Properties, LLC. Location: APN 109-13-001D, 500 S Marina St., 8 Parcels Comprising 3.5 Acres, in T13N, R02W, Section 04, SE 1/4.

ITEM SUMMARY

This item is for a Water Service Application for a 90-unit multi-family apartment complex. The site is located south of Leroux Street on Marina Street.

BACKGROUND

If approved this Water Service Agreement (WSA) would provide 11.66 acre-feet per year of water for this project consisting of a 90 apartment units. This project was heard at the Planning and Zoning Meeting on January 9, 2025. The Planning and Zoning Commission voted to deny the request for rezoning to allow additional apartment units and the applicant has decided to move forward with the current zoning which allows the 90 units included in this application. Per the Amended 2022 Water Management Policy, a Water Service Agreement (WSA) application was submitted for this project for review of estimated water usage. The WSA application package includes a basic site plan to provide enough information for staff to evaluate water demand associated with the proposed improvements. A demand analysis was prepared by Michael Taylor Architects, using residential and landscape water multipliers provided by City staff. Based on average residential use derived from the Water Resources Management Model (WRMM), each unit is assumed to use 0.12 AFY giving a total estimated use of 10.8 acre-feet per year for the proposed buildings. According to the current site plan there is approximately 0.57 acres of landscaping proposed with the project. Using the Arizona Department of Water Resources' (ADWR) 1.5 acre-feet per acre multiplier for low water use landscape gives an estimate outdoor use of 0.86 acre-feet per year. The total estimated water use is 11.66 acre-feet per year.

Currently the residential water budget contains 25 acre-feet with an maximum allowed request of 12.5 acre-feet available without appeal. The 11.66 acre-feet per year request for this project is below the maximum allowed request. Since this apartment project provides needed housing in the community, fulfils in-fill development objectives of the General Plan, and uses less water than a conventional single family residential project producing the same number of units, staff recommends forwarding this project to Council for approval.

Applicant has completed the following:
Application Received: February 07, 2024
Submitted All Documents: January 09, 2025
Planning and Zoning Commission: May 30, 2024
Water Issues Subcommittee: February 4, 2025
City Council: Anticipated for February 25, 2024

FINANCIAL IMPACT

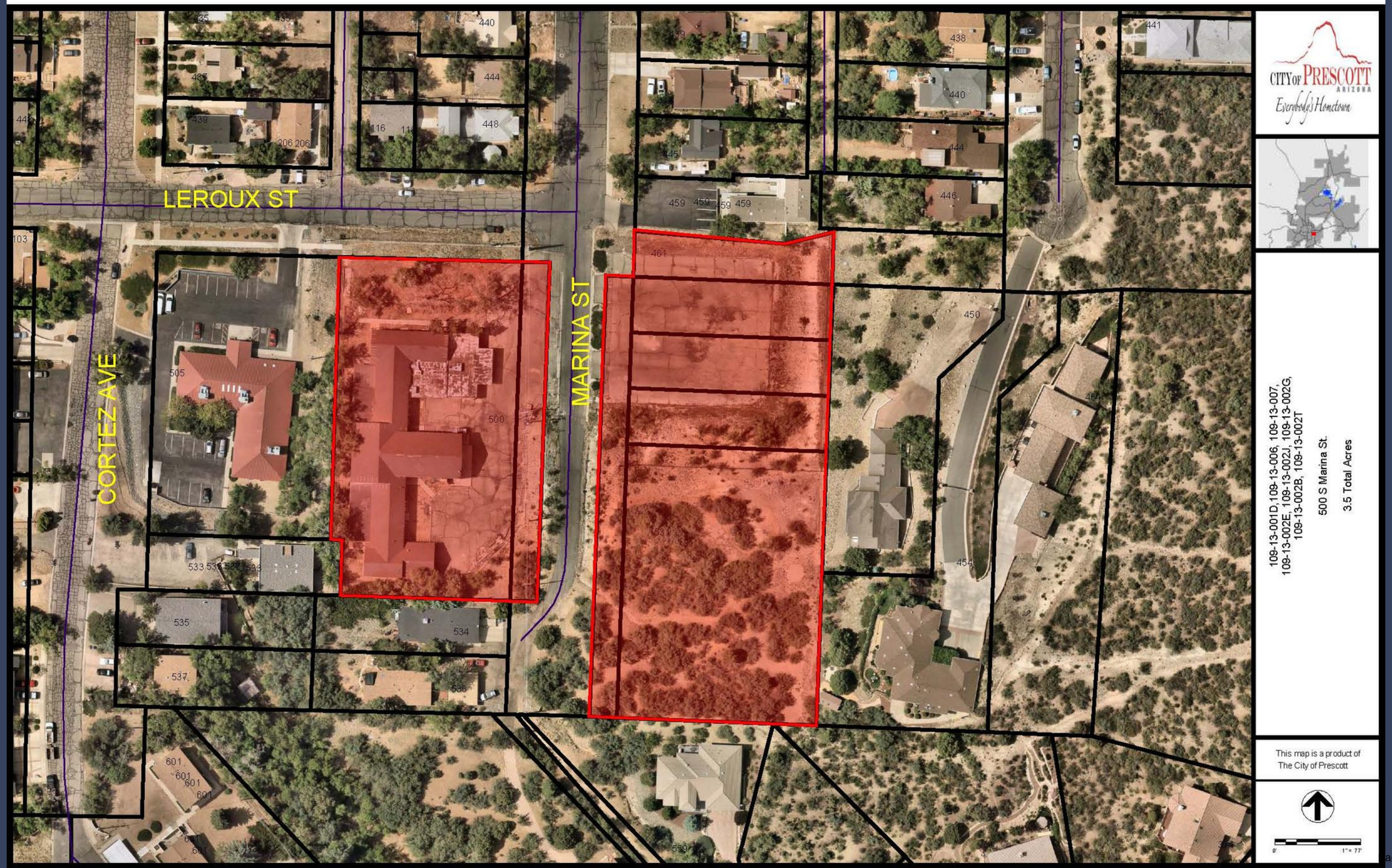
None at this time.

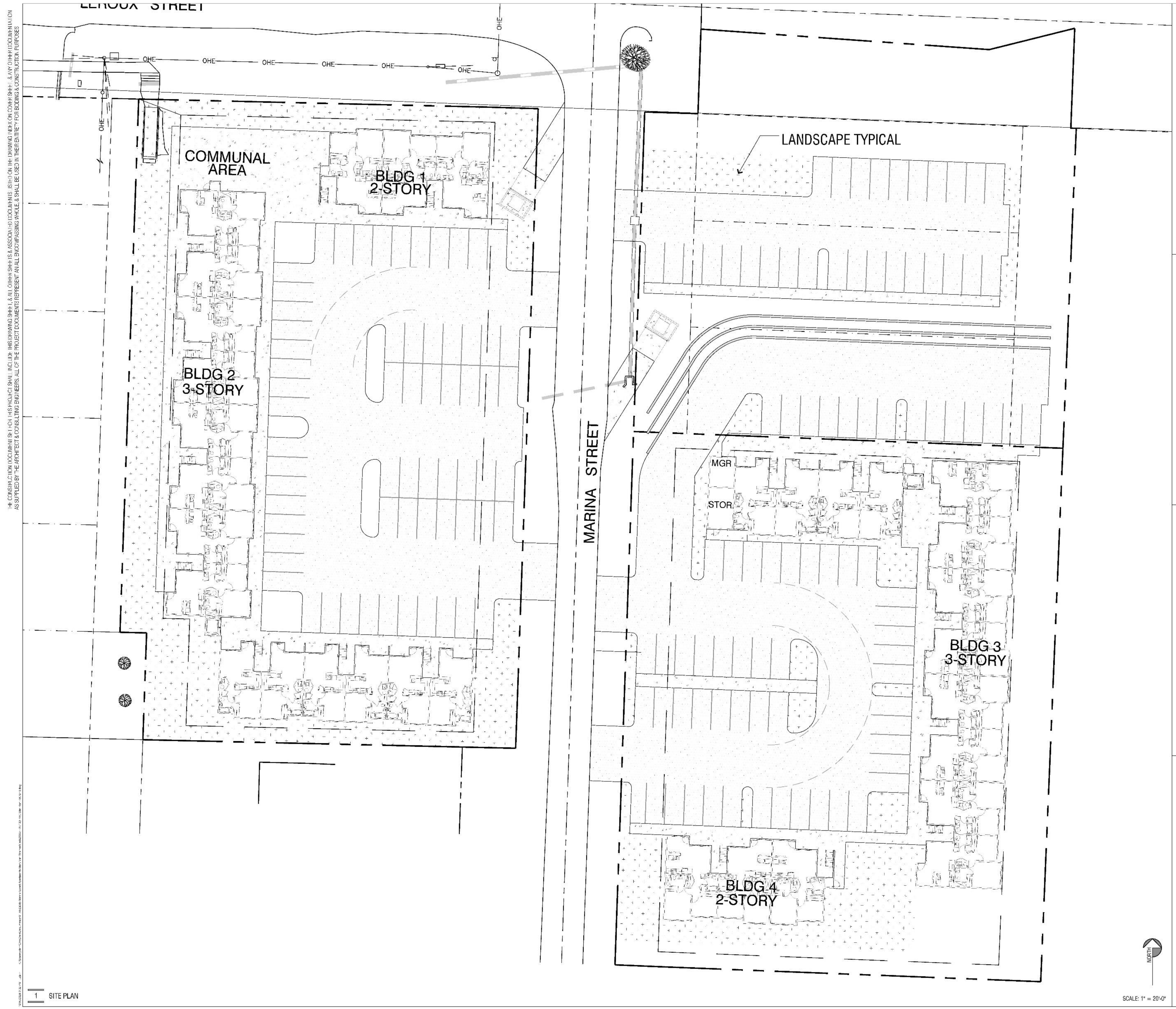
RECOMMENDED ACTION

MOVE to recommend forwarding WSA24-013 to Council for approval or denial

ATTACHMENTS

1. WSA24-013 Marina St Presentation


LEROUX ST
CORTEZ AVE
MARINA ST
500
505
461
450
454
535
534
537
536
601
CITY OF PRESCOTT
ARIZONA
Everybody's Hometown
109-13-001D, 109-13-006, 109-13-007,
109-13-002E, 109-13-002J, 109-13-002G,
109-13-002B, 109-13-002T
500 S Marina St.
3.5 Total Acres
This map is a product of
The City of Prescott
0'
1" = 77'



1 SITE PLAN

SCALE: 1" = 20'-0"

OWNER
YH DEVELOPMENT PROPERTIES LLC
1645 WEST MOORE ROAD
TUCSON, ARIZONA 87555
(928) 237-7154

ARCHITECT
MICHAEL TAYLOR ARCHITECTS, INC.
118 SOUTH PLEASANT STREET
PRESCOTT, ARIZONA 86303
(928) 445-0626

PROJECT TEAM

PARCEL #:	109-13-001D
SUBDIVISION & LOT #:	PRESCOTT ORIGINAL TOWNSITE
JURISDICTION:	CITY OF PRESCOTT
ZONING:	MULTI-FAMILY HIGH DENSITY (MF-H) ZONING
SETBACKS:	20'-0" FRONT / REAR 7'-0" SIDES
ASSESSOR ACRES:	3.5 ACRES
PROJECT ADDRESS:	500 SOUTH MARINA STREET
PARKING REQUIRED: PER COP LDC TABLE 6.2.3:	1-BEDROOM: 30 UNITS = 30 SPACES 2-BEDROOM: 42 UNITS = 84 SPACES 2-BED SENIOR:18 UNITS = 18 SPACES GUEST SPACES: = 20 SPACES TOTAL PARKING REQUIRED = 152 SPACES
PARKING PROVIDED:	153 PARKING SPACES
ALLOWABLE UNITS:	1 UNIT PER SF-9 LOT = 3 UNITS 3 UNITS PER FIRST 7,500 SF = 3 UNITS 1 UNIT PER ADDITIONAL 1,400 SF = 84 UNITS TOTAL UNITS = 90 UNITS [(126,324 SF - 7,500 SF) / 1,400 SF = 84.87]

PROJECT DATA

GOVERNING BUILDING CODES

ALL CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING CODES AND AMENDMENTS PER THEIR ADOPTING ORDINANCES:

2018 INTERNATIONAL BUILDING CODE
2018 INTERNATIONAL MECHANICAL CODE
2018 INTERNATIONAL PLUMBING CODE
2017 NATIONAL ELECTRICAL CODE
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
2012 INTERNATIONAL ENERGY CONSERVATION CODE

ALL PRODUCTS LISTED BY I.C.B.O./N.E.R. NUMBER(S) SHALL BE INSTALLED PER THE REPORT AND MANUFACTURER'S WRITTEN INSTRUCTIONS. PRODUCT SUBSTITUTION(S) FOR PRODUCT(S) LISTED SHALL ALSO HAVE I.C.B.O. APPROVED EVALUATION REPORT(S) OR BE APPROVED AND LISTED BY OTHER NATIONALLY RECOGNIZED TESTING AGENCIES.

APPLICABLE CODES

1. CODES AND AMENDMENTS PER THEIR ADOPTING ORDINANCES.

GOVERNING CODES

REGISTERED ARCHITECT CERTIFICATE NO. 24683 MICHAEL G. TAYLOR Date Signed 11·16·23 ARIZONA U.S.A.

MICHAEL TAYLOR ARCHITECTS, INC.
118 SOUTH PLEASANT STREET PRESCOTT, ARIZONA 86303
PHONE 928 . 445 . 0626 WWW . MTAI . NET

A NEW APARTMENT COMPLEX FOR
MARINA STREET APARTMENTS
500 SOUTH MARINA STREET
PRESCOTT ORIGINAL TOWNSITE
APN: 109-13-001D
S04 T13N R02W
MF-H ZONING
PRESCOTT ARIZONA 86303

MTAI PROJECT NUMBER: 23045 PLOT DATE: 10.23.23

DATE	DESCRIPTION

SITE PLAN

AS101

WSA24-013 APPLICATION SUMMARY

- 90-unit multi-family apartment complex
- Estimated usage per unit is .12 AFY with 10.8 AFY total indoor use
- Estimated landscape – .57 acres at 1.5 AFY/acre for a total of .86 AFY
- Estimated Total Demand – 11.66 AFY

RECOMMENDED ACTION:

MOVE to recommend forwarding WSA24-013 to Council for approval

CITY OF PRESCOTT
ARIZONA

TO:	MAYOR AND CITY COUNCIL
AGENDA:	February 4 Subcommittee on Water Issues
DATE:	February 4, 2025
DEPT:	Public Works
ITEM #:	3.C
SUBJECT:	Presentation & Discussion Regarding a Potential Memorandum of Understanding (MOU) with The Nature Conservancy.

ITEM SUMMARY

This item is for the review of a proposed MOU with The Nature Conservancy for grassland restoration in the Big Chino Sub-basin. Staff recommends forwarding this proposal to the Council for approval.

BACKGROUND

An MOU is proposed where The Nature Conservancy (TNC) and the City will collaborate on developing and implementing a restoration project on the Big Chino grasslands, specifically the Big Chino Water Ranch (BCWR). The objectives are to: restore and improve habitat connectivity to facilitate self-sustaining natural processes, reduce erosion at ephermal washes, upland gullies, and springs; and improve water quality for healthy fish and wildlife for sustainable recreation.

The precursor to this MOU was TNC completing, in cooperation with Natural Channel Design Engineering, Inc (NCDE), a report titled Big Chino-Williamson Valley Watershed Assessment (Assessment). TNC contracted with NCDE to conduct this watershed and grassland assessment for the purposes of identifying potential grassland and watershed restoration projects. The types of proposed restorations included: headcut repair, bank stabilization, grade control, vegetation management, and induced meander. In the report on page 29, Big Chino Wash through the BCWR is addressed specifically,

> "Plug and spread treatments on private land i.e. the land purchased by the City of Prescott for the Big Chino Water Ranch are opportunities to spread flood flows up and out of the incised channel to increase benefits and reduce bank erosion. Work in this area is a very high priority for aquifer recharge and to maintain native grass dominated pastures."

The City believes in land stewardship, aquifer recharge and protection, and improved ephemeral stream routing (erosion reduction). TNC shared the Assessment and also notified the City of funding to complete on-the-ground work. The TNC has prepared an MOU to seek approval to further study the possible sites on the BCWR and subsequently recommend which site(s) and technique(s) are feasible for restoration work.

A brief presentation will be provided on the Assessment, what TNC hopes to accomplish, and why they are seeking a restoration project on the BCWR.

FINANCIAL IMPACT

None at this time.

RECOMMENDED ACTION

MOVE to recommend forwarding the MOU to Council for approval

ATTACHMENTS

1. Draft MOU
2. Big Chino Assessment Presentation

Memorandum of Understanding between
The Nature Conservancy
and the City of Prescott, Arizona

This Memorandum of Understanding ("MOU") is entered into this [day] of [month], [year], between the City of Prescott ("Partner"), a government entity, established under the laws of Arizona with its principal place of business at 201 N. Montezuma St., Prescott, AZ 86301, and The Nature Conservancy ("TNC"), a District of Columbia, USA, non-profit corporation with its principal place of business in Arlington, Virginia, USA.

Partner's mission includes an objective to the sustainability of economic foundations, government services at acceptable levels, and water supplies and natural resources in the City of Prescott and its environs. TNC's mission is to conserve the lands and waters on which all life depends. TNC and the Partner have complimentary missions to improve sustainability of natural and water resources. The parties wish to work together to improve habitat in the Big Chino grasslands in Yavapai County, Arizona.

1. OBJECTIVES. The objective of this MOU is to formalize a mutual collaboration, with the purpose of developing and implementing a restoration project in the Big Chino grasslands based upon the evaluations and recommendations of the Big Chino-Williamson Valley Watershed Assessment (Exhibit B). The restoration project will:

- restore and improve habitat connectivity to facilitate self-sustaining natural processes;
- reduce erosion at ephemeral washes, upland gullies, and springs;
- improve water quality for healthy fish and wildlife and sustainable recreation.

In this sense, the MOU seeks to facilitate this interaction by outlining means of collaboration, communication mechanisms, and methods for the implementation of activities.

2. RESPONSIBILITIES OF THE PARTIES. This section sets forth the parties' intentions with respect to the expected activities under this MOU. Each party's responsibilities shall be fulfilled within the bounds of its available resources, budget, and procedures, as determined at its own discretion.

a) TNC will be responsible for:

(1) Working with Partner to identify the preferred project area within the Partner's Big Chino Water Ranch property based on mutually agreed upon goals.
(2) Working with Partner to identify mutually agreed upon qualified consultant(s) for engineering and construction.
(3) Contracting with and managing the mutually agreed upon consultant(s).

(4) Sharing all information with the Partner throughout the process to ensure the mutually agreed upon goals are met.

b) Partner will be responsible for:

(1) Working with TNC to identify the preferred project area within the Partner's Big Chino Water Ranch property based on mutually agreed upon goals.
(2) Providing feedback on selecting qualified consultant(s), defining the scopes of work, and draft reports.
(3) Providing access to project area at the Big Chino Water Ranch for the duration of the project.
(4) Providing additional information to the consultant(s) when needed.
(5) Sharing information with TNC throughout the process to ensure the mutually agreed upon goals are met.

3. PRINCIPAL CONTACTS. The principal contact for each party will be:

For Partner:
Leslie Graser
Water Resources Project Manager
433 N. Virginia, Prescott, AZ
928-777-1130
leslie.graser@prescott-az.gov

For TNC:
Selena Pao
Northern Arizona Water Projects Manager
1510 E. Fort Lowell Rd., Tucson, AZ
928-679-0075
spao@tnc.org

Each party may change its principal contact at any time by written notice to the other party.

4. TERM. This MOU will begin on March 3, 2025, and will remain in effect until March 4, 2030 ("Expiration Date"), unless sooner terminated as provided herein. Any extension beyond the Expiration Date must be in writing and signed by the parties.

5. TRANSFER OF FUNDS. This MOU does not obligate either party to provide financial support of any sort. Any transfer of funds between the parties will be the object of an independent contract that includes clauses and other conditions in accordance with the internal procedures of each party and that will be duly signed by both parties.

6. TERMINATION. Either party may terminate this MOU by giving thirty (30) days written notice to the other party.

7. TITLE AND USE OF INTELLECTUAL PROPERTY.

a) Under the provisions of this MOU, the parties may produce documents, reports, studies, photographs, and maps, as well as documents as well as product-specific documents (collectively "Works"). Unless otherwise agreed to by the parties in writing, the copyright and other intellectual property rights in any such Work will belong to the party that produces the Work. If a Work is jointly produced by the parties, the copyright will be owned jointly by the parties. In all cases of co-authorship of scholarly journals or similar publications, each party is hereby authorized to use the Work, without prior authorization from the other, for non-commercial purposes in support of the party's mission.

b) Neither party will publish or otherwise distribute Works of the other party without both the previous written consent of the other party and crediting the other party in such Work.

c) The names and logos of the parties are trademarks; as such, they may not be used for any purpose without the prior express written permission of their owners.

8. POLITICAL CAMPAIGN INTERVENTION PROHIBITION. The parties agree not to directly or indirectly participate or intervene in any political campaign on behalf of or in opposition to any Candidate for public office or any political party in any election, at any level of government, anywhere in the world. This means that any activity that could help or hurt the chances for election of any Candidate, group of Candidates, or any political party is prohibited. A "Candidate" is any individual who offers him/herself, or is proposed by others, as a contestant for an elective public office.

9. CONFIDENTIALITY. During the course of the performance of this MOU, the parties may have access to materials, data, strategies, systems, or other information relating to the other party and its programs which is intended for internal use only. Any such information shall not be used, published, or divulged to any individual or corporation, in any manner or for whatever purpose, except through the party's previous written permission, which may be withheld by the respective party at its sole discretion.

10. OTHER PARTNERS. This MOU does not preclude the parties from establishing similar agreements or contracts with other individuals, entities, agencies, and public or private organizations. The parties recognize the importance of continuing to cooperate and work with other partners in programs of mutual interest and to be able to, by means of a written document signed by both parties, invite other partners to participate in the activities implemented under this MOU.

11. NON-BINDING. While the parties are committed to using their best endeavors to achieve its purpose, this document is not intended to create binding or legal obligations on the parties. Nothing in it shall be construed as creating any legal relationship between the parties and its provisions do not create rights, obligations, or duties for either party. It is intended to be a statement of intent to foster genuine and mutually beneficial cooperation.

12. NO JOINT VENTURE. The parties agree that they are not entering into a legal partnership, joint venture or other such business arrangement, nor is the purpose of the parties to enter into a commercial undertaking for monetary gain. Neither party will refer to or treat the arrangements under this MOU as a legal partnership or take any action inconsistent with such intention.

13. DISPUTE RESOLUTION. The parties hereby agree that, in the event of any dispute relating to this MOU, they shall first seek to resolve the dispute through informal discussions. If a dispute cannot be resolved informally within sixty (60) consecutive working days, the parties agree to terminate this MOU.

14. LIABILITY. Each party shall be solely responsible and liable for the actions or omissions of its own employees, agents, and representatives involved with the activities contemplated under this MOU, including any related damages, losses and claims to or by third parties. Nothing herein shall be construed as creating joint or several liability between the parties.

15. ASSIGNMENT. Neither party may assign or transfer its rights and obligations under this MOU without the prior written consent of the other party.

16. COMPLIANCE WITH LAWS. The parties will observe all applicable laws and regulations during the execution of the work implemented under the provisions of this MOU.

17. AMENDMENTS. This MOU, including any material modification to Section 2, may only be modified by a written amendment signed by both parties.

IN WITNESS WHEREOF, the parties have executed this Memorandum of Understanding, effective as of the last date written below.

FOR CITY OF PRESCOTT, ARIZONA	**FOR THE NATURE CONSERVANCY**
Gwen Rowitsch Public Works Director	[Representative's Name] [Representative's Title]
Date	Date

Attachments:
Exhibit A: Project Area Map
Exhibit B: Big Chino-Williamson Valley Watershed Assessment

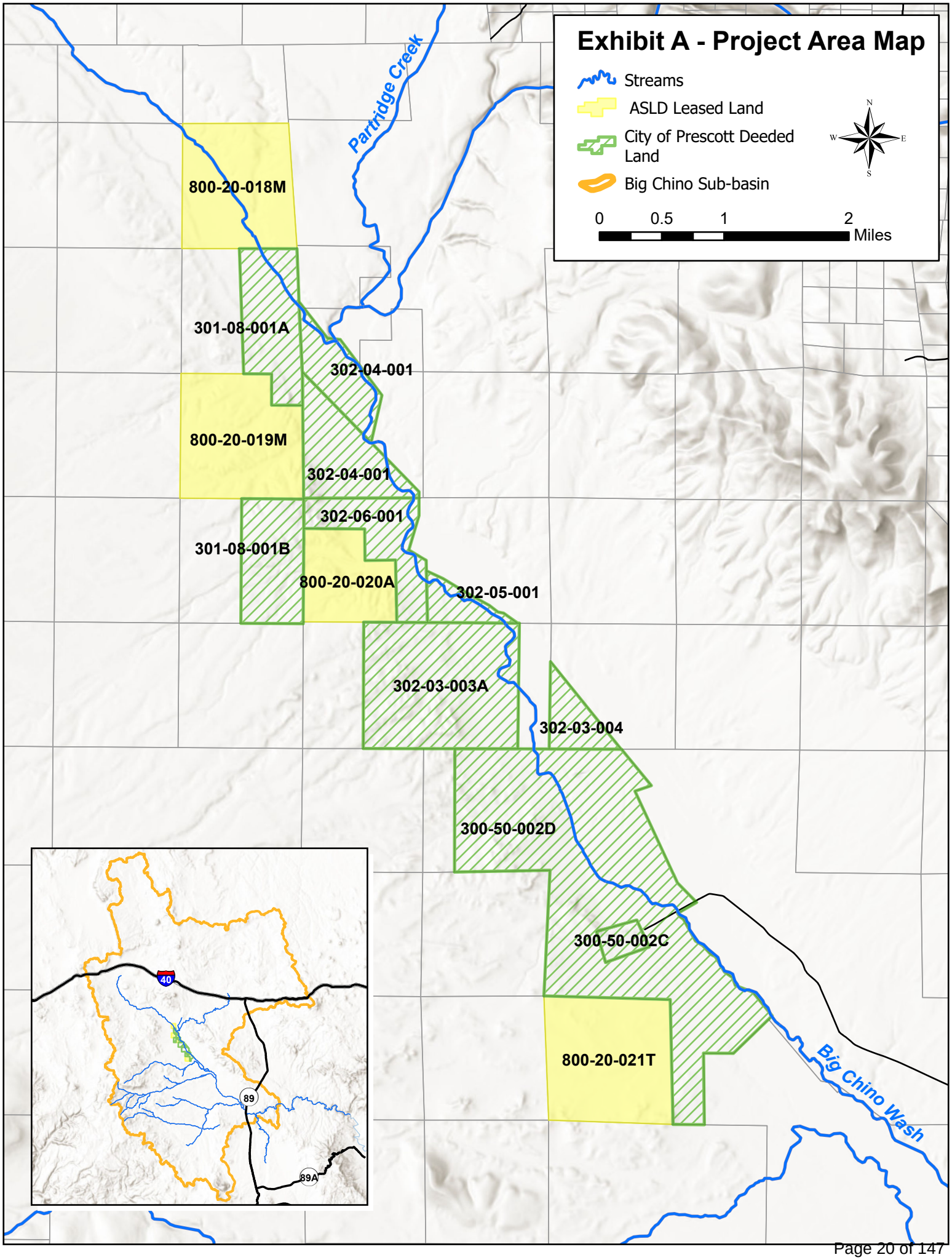


Exhibit A - Project Area Map
Streams
ASLD Leased Land
City of Prescott Deeded Land
Big Chino Sub-basin
N
W
E
S
0
0.5
1
2
Miles
Partridge Creek
800-20-018M
301-08-001A
302-04-001
800-20-019M
302-04-001
302-06-001
301-08-001B
800-20-020A
302-05-001
302-03-003A
302-03-004
300-50-002D
300-50-002C
800-20-021T
Big Chino Wash
40
89
89A

Big Chino-Williamson Valley Watershed Assessment

Final Report Draft

Natural Channel Design
Engineering Inc.
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Natural Channel Design Engineering, Inc.
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Big Chino-Williamson Valley Watershed Assessment

Final Report Draft

Submitted To:

Selena Pao
The Nature Conservancy
Arizona Business Unit
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Table of Contents

Project Overview and Location

The Nature Conservancy (TNC) has contracted Natural Channel Design Engineering, Inc. (NCDE) to conduct a watershed and grassland assessment of the Big Chino-Williamson Valley Watershed and grasslands overlying the Big Chino Aquifer. The Big Chino Valley comprises a significant portion of Central Arizona's grasslands and overlies the Big Chino Aquifer. These grasslands are important habitats for wildlife, grazing lands for livestock, and a major recharge zone of the regional aquifer. Big Chino Wash feeds into the Upper Verde River, an important habitat for wildlife and Arizona's native fish populations and a vital source of surface water for Arizona. The Big Chino grasslands are an important habitat for diverse wildlife like pronghorn antelope, grazing lands, and a recharge zone for the Big Chino Aquifer.

The Big Chino Aquifer is an important regional aquifer and groundwater source for the communities of Chino Valley, Paulden, Prescott, and private landowners. The Big Chino grasslands overlay the basin-fill sediments that comprise the Big Chino Aquifer, which historically supports ranching, irrigated agriculture, and wildlife like pronghorn antelope. TNC is identifying cooperative conservation actions with landowners and agency land managers to protect these lands and improve watershed health. NCDE reviewed existing reports, examined GIS datasets and conducted new spatial analyses, to examine the current condition of the Big Chino grasslands and engaged with stakeholders at focused meetings to identify potential for grassland and watershed restoration projects. The Big Chino aquifer is a major regional aquifer underlying the Big Chino and Williamson Valley watersheds. Surface land ownership is a mixture of private and public land. A map of the Big Chino aquifer is shown in relation to the Big Chino Williamson Valley Watershed and neighboring stream channels.

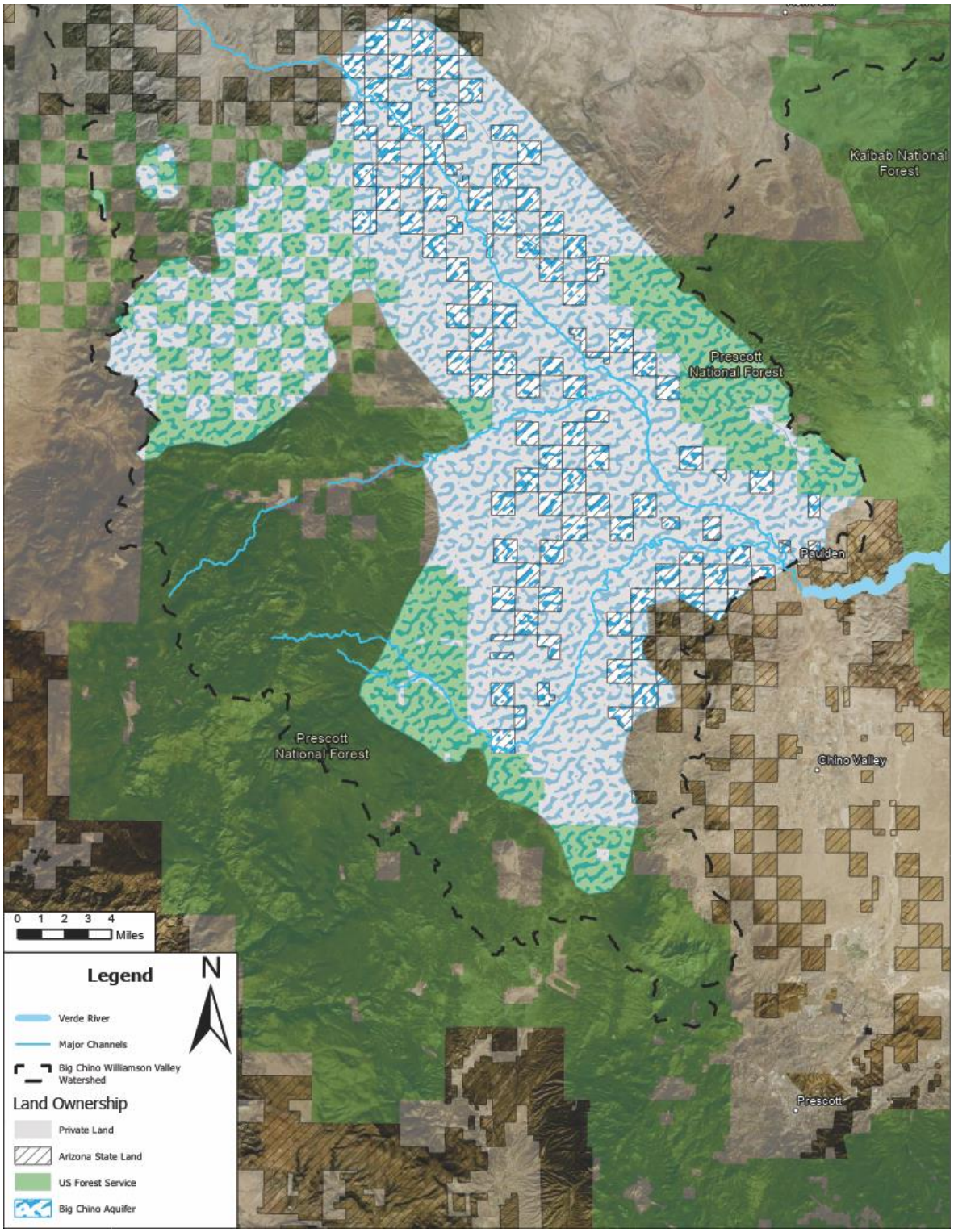

Figure 1 Overview map showing the extent of the Big Chino aquifer, part of the Big Chino Williamson Valley Watershed, Walnut Creek, Williamson Valley Wash, Big Chino Wash; and distribution of private land ownership, Arizona State Trust Land, and U.S. Forest Service lands.

Watersheds have multiple hydrological and ecological functions including but not limited to conveying surface flows, conduits for groundwater recharge, and a mosaic of habitat types. Healthy functioning watersheds absorb rainfall, infiltrate water into the soil, store surface and groundwater, and slowly release storm water into channels (Barrett et al. 1993; Horton 1937). Channel density in a healthy watershed is the minimum necessary to convey runoff from the watershed, to maintain baseflows and minimize peak flows (Neary et al. 2012). Compared to healthy watersheds, unhealthy watersheds have expanded channel networks (Barrett et al. 1993), which produces higher sediment loads due to sparse vegetation cover and bare soils (Neary et al. 2012). Unhealthy watersheds without adequate vegetation cover to stabilize the soils have reduced baseflows and increased peak flows (Neary et al. 2012).

Many watersheds across the western United States have become impaired due to overextraction and changes in land use which led to watershed and riparian degradation (Cooperrider and Hendricks 1937; Leopold 1951). Overgrazing has caused a decline of native grass species adequate to protect and stabilize the soil. This can lead to a replacement by exotic species, which do not provide the preferred forage for wildlife and livestock and have different growth patterns than the native species evolved with the ecosystem. Bare soil or soil without sufficient vegetative cover to protect from erosion is easily erodible and can easily become compacted. As it is compacted, infiltration ability is reduced, and runoff increases. This can lead to problems with flooding and reduces the potential recharge that could be gained from runoff. Together, these resulted in increased surface flows and larger flood flows leading to widening and downcutting channels. As these problems continued to evolve, they increased the volume of water conveyed rapidly through incised channels rather than wide spreading surface flows over healthy grasslands.

Hydrology

The Big Chino-Williamson Valley Watershed (H15060201) (Figure 2) comprises three of the Upper Verde River (UVR) sub-watersheds (Black et al. 2005). The Aubrey Valley Sub-basin is the uppermost UVR watershed above Upper Big Chino Wash. Williamson Valley Wash is south of Lower Big Chino Wash and the Granite Creek Sub-Basin is primarily below the Sullivan Dam (Neary et al. 2012). Big Chino Wash covers 2,153 acres with half of the area with slopes less than 5% (Black et al. 2005). These low gradient areas are important areas to slow water and increase infiltration. Surface water conveyed as sheet flows over the Big Chino grasslands are an important conduit for groundwater recharge of the underlying basin-fill aquifers.

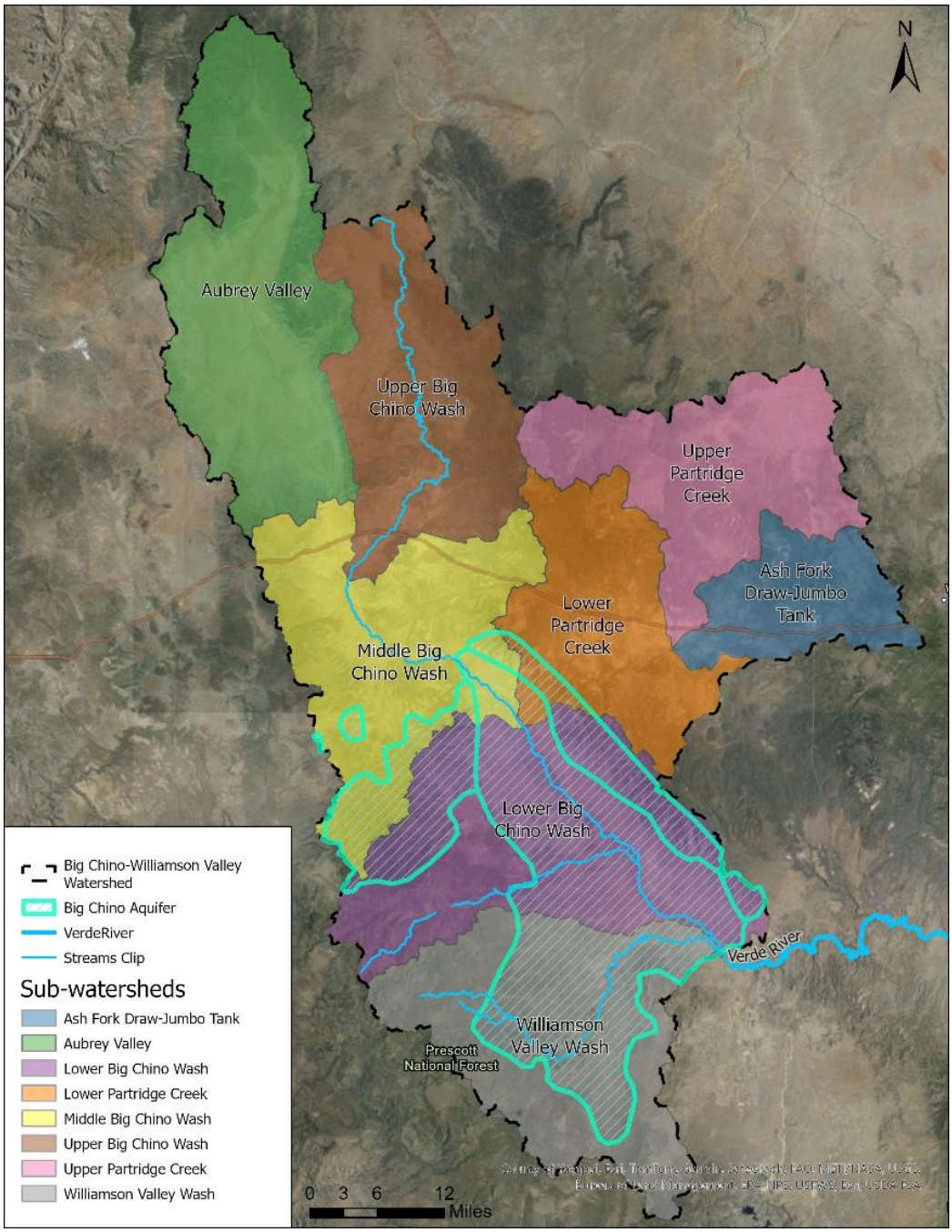

Figure 2 Big Chino-Williamson Valley Watershed (H15060201) HUC10 and sub-basins

The Big Chino Sub-Basin is the uppermost sub-basin of the Verde River watershed. Big Chino Wash is fed by three major tributaries: Partridge Creek, Walnut Creek, and Williamson Valley Wash. Big Chino Wash is dammed at Sullivan Lake north of Paulden but historically would form the headwaters of the Verde River (ADWR 2000).

The Big Chino Valley is a mix of grasslands and juniper woodlands. The major mountain ranges are the Santa Maria and Juniper Mountains west of Big Chino Wash and Sullivan Buttes to the east. There are 95 springs in the Big Chino-Williamson Valley Watershed and 12 springs overlay the Big Chino Aquifer.

The Big Chino Subbasin stores groundwater in two aquifers, shown below in Figure 32. The upper aquifer is a major water source for irrigation and municipal water and is comprised of unconsolidated sedimentary deposits and volcanic rocks with an average depth of 435ft (Neary et al. 2012). The lower aquifer is comprised of 'basement' Paleozoic carbonate rocks and has a lower discharge rate than the upper aquifer (Neary et al. 2012). The unconsolidated aquifer in the alluvial lower reaches of Williamson Valley Wash and Walnut Creek represent a good potential area for recharge in the Big Chino Aquifer which, along with the Paleozoic carbonate aquifer, comprises the baseflow of the Upper Verde River (UVR) (Wirt & Hjalmarson 2000).

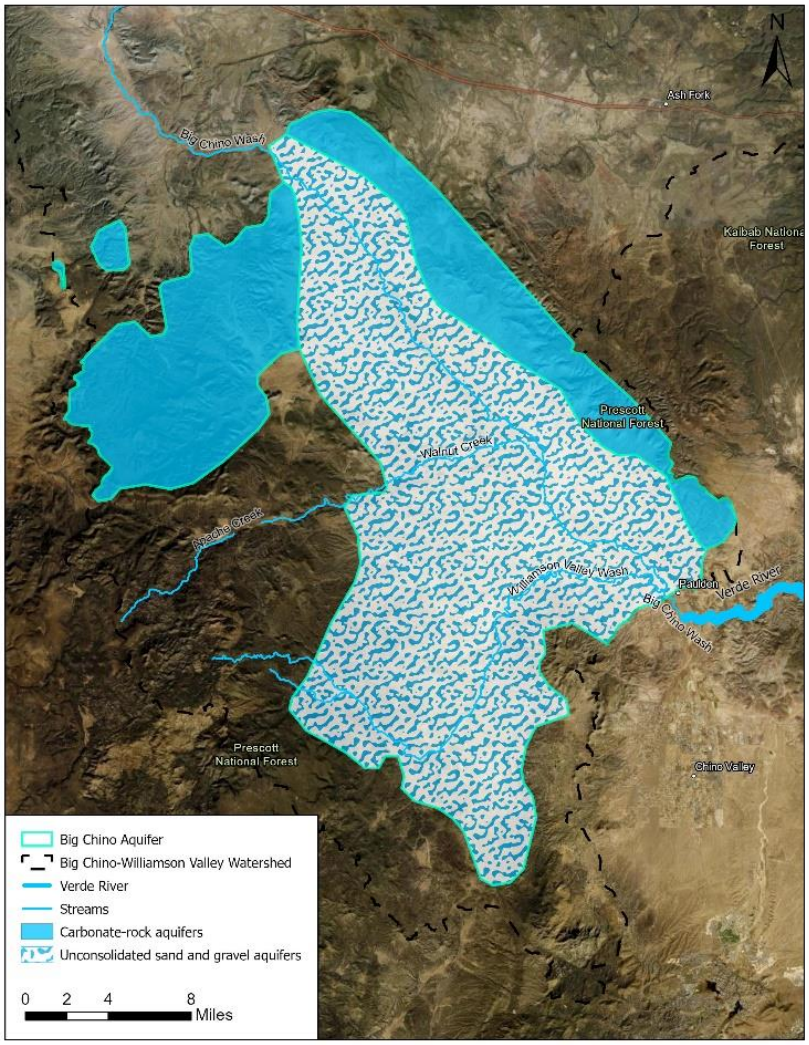

Figure 3 Overview of the two aquifers comprising the Big Chino Aquifer.

Continued urbanization and groundwater pumping in the region is the primary cause of aquifer and baseflow depletion (Wirt and Hjalmarson 2000) but climate change has also had a negative effect. A map showing the Big Chino-Williamson Valley watershed, the Big Chino aquifer, major streams and a heatmap of groundwater pumping wells is shown in Figure 4. Areas with a high density of wells can form a cone of depression in the groundwater table where the local groundwater elevation is lower, and the effect emanates out from the center of the area. As shown in Figure 4 the highest density of wells in our project area is in and around the community of Paulden. With the location of Paulden near the headwaters of the Verde, reducing groundwater pumping in this area is the single most impactful action to ensure continued baseflows at the Upper Verde Headwaters (Montgomery and Associates 2021).

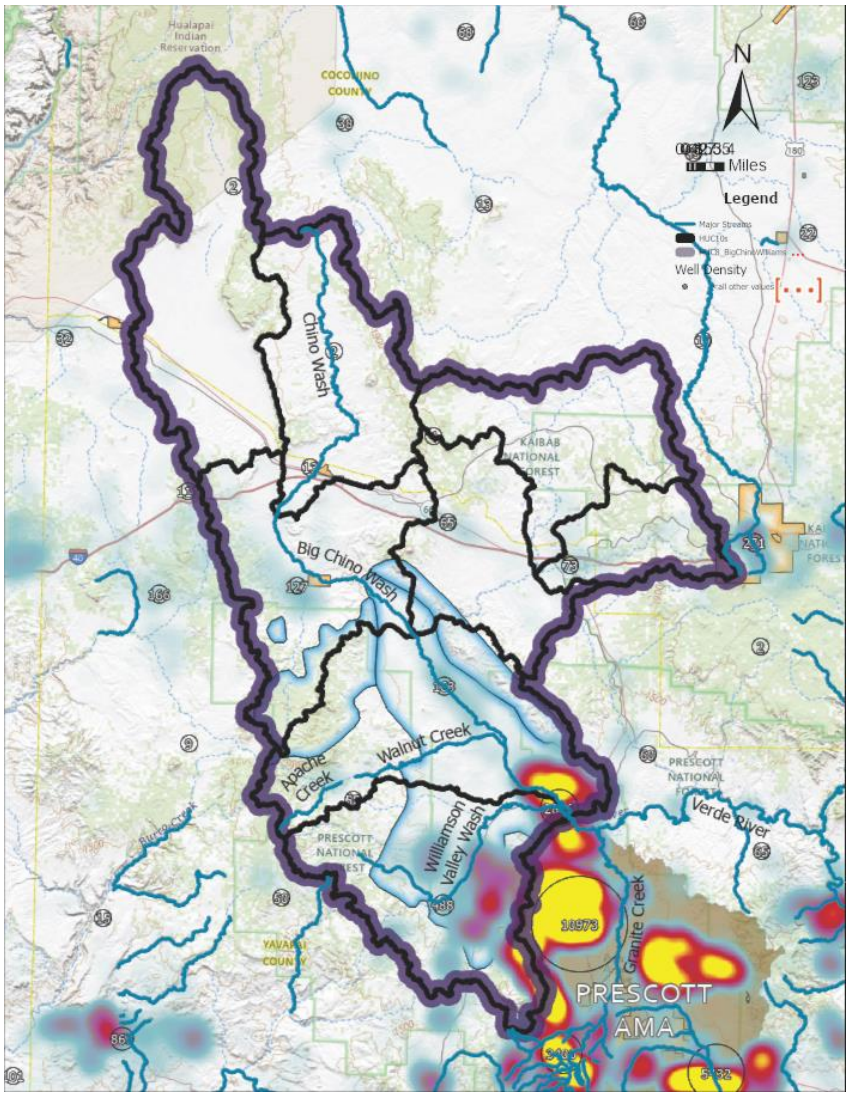

Figure 4 Map showing the Big Chino-Williamson Valley Watershed, the Big Chino aquifer, density of groundwater wells with higher density shown as red/yellow and lower density as cooler colors in the heatmap.

Climate

The climate in the Big Chino Wash follows typical Southwest precipitation patterns of bimodal winter and summer precipitation with spring and fall droughts (Neary et al. 2012). Summer precipitation comes as intense localized monsoons, with onsets in early July (Neary et al. 2012). Irregular intervals of precipitation surges and dry spells are typical weather patterns during this seasonal cycle of rainfall (Higgins et al., 2004; Pascale & Bordoni, 2016). Elevation and latitude are strong controls on precipitation patterns across Arizona, with regions of high elevation seeing greater amounts of precipitation during the monsoon season (Crimmins, 2006). Regional precipitation in the Big Chino Wash occurs more in the winter months, often as snow at higher elevations.

While much of the Southwest relies on rainfall to recharge water systems, recharge is not expected yearly or in all locations (Flint et al., 2004). Recharge is affected both spatially and temporally and varies greatly from year to year. Since the beginning of the 20th century, temperatures in Arizona have risen approximately 2.5°F, with the increase in average temperature and extreme heat projected to continue (Frankson et al., 2022). Trends in annual precipitation since 1995 highlight the relatively dry years in Arizona (Figure 6), including 17 of the last 26 years have experienced below average precipitation (Frankson et al., 2022).

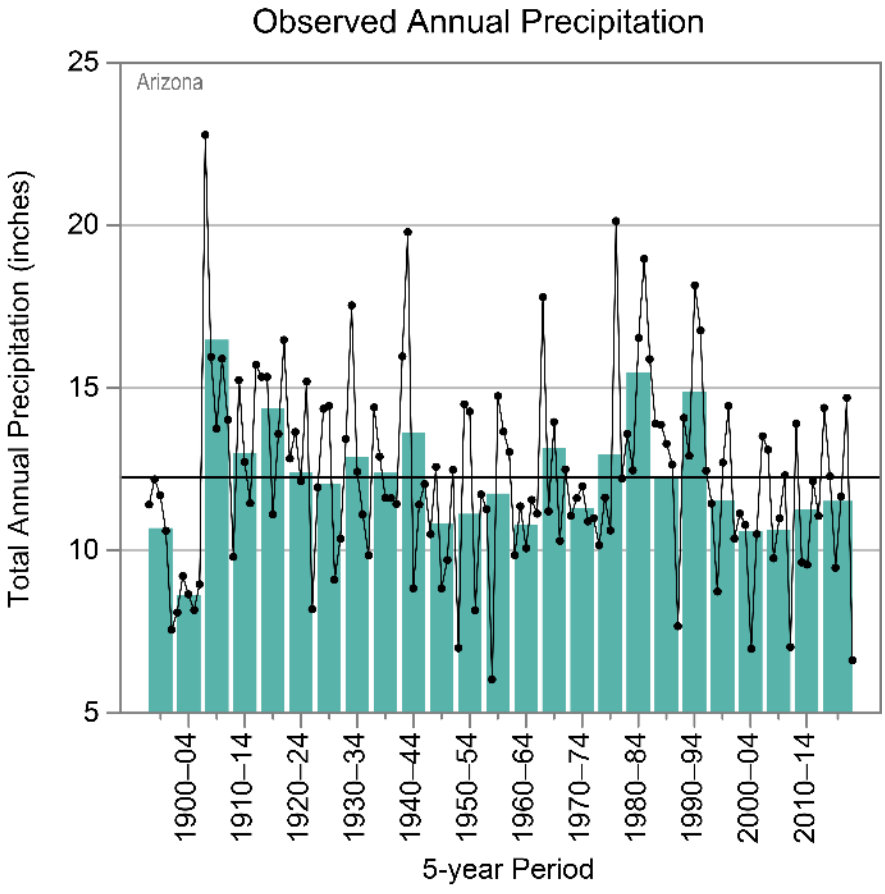

Figure 5 Arizona State Climate Studies. Graph from National Oceanic and Atmospheric Administration (NOAA) (Frankson et al., 2022)

Geology and Soil

The Big Chino Aquifer is a basin fill aquifer, which means that groundwater is stored in sediment basins filling pockets in the lower hardrock (Neary et al. 2012). The Big Chino-Williamson Valley Watershed shows basin and range topography common in the Southwest. Northwest trending normal faults have lowered and widened the central valleys between mountain ranges in the Prescott and Kaibab National Forests. These basins then filled with various sedimentary layers ranging from coarse conglomerates to fine-grained sandstones and are overlain in areas with unconsolidated alluvium (especially along Big Chino Wash). A simplified geology map is shown for the project area in. Some volcanic rocks are interbedded with the sedimentary layers, especially in the Big Chino-Williamson Valley Watershed's northern part. Below Sullivan Dam, the Verde River flows through an incised channel through Paleozoic bedrock with little alluvium. The Big Chino Aquifer saturates sedimentary and alluvial layers in the southern part of the watershed which makes these areas over the unconsolidated alluvium aquifers our preferred recharge zones. Geology and soil permeability help to prioritize restoration work based on groundwater recharge potential (Neary et al. 2012). Figure 7 shows the infiltration rates of the uppermost meter of soil, divided into four categories from most permeable to least permeable. The more permeable regions of the watershed have a higher recharge potential for the aquifer, and restoration projects should be prioritized in these areas in the Lower Big Chino Wash and Walnut Creek watersheds.

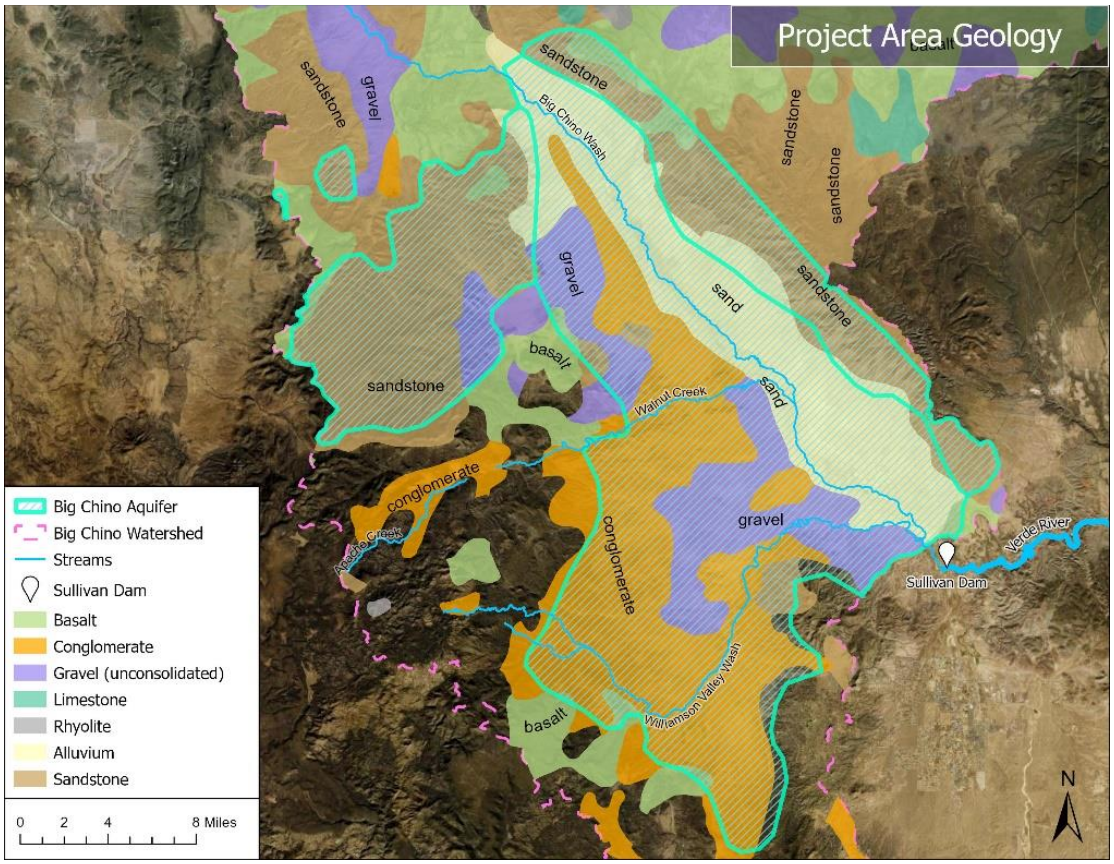

Figure 6 Simplified geology map depicting the geological foundation of the Big Chino Aquifer area.

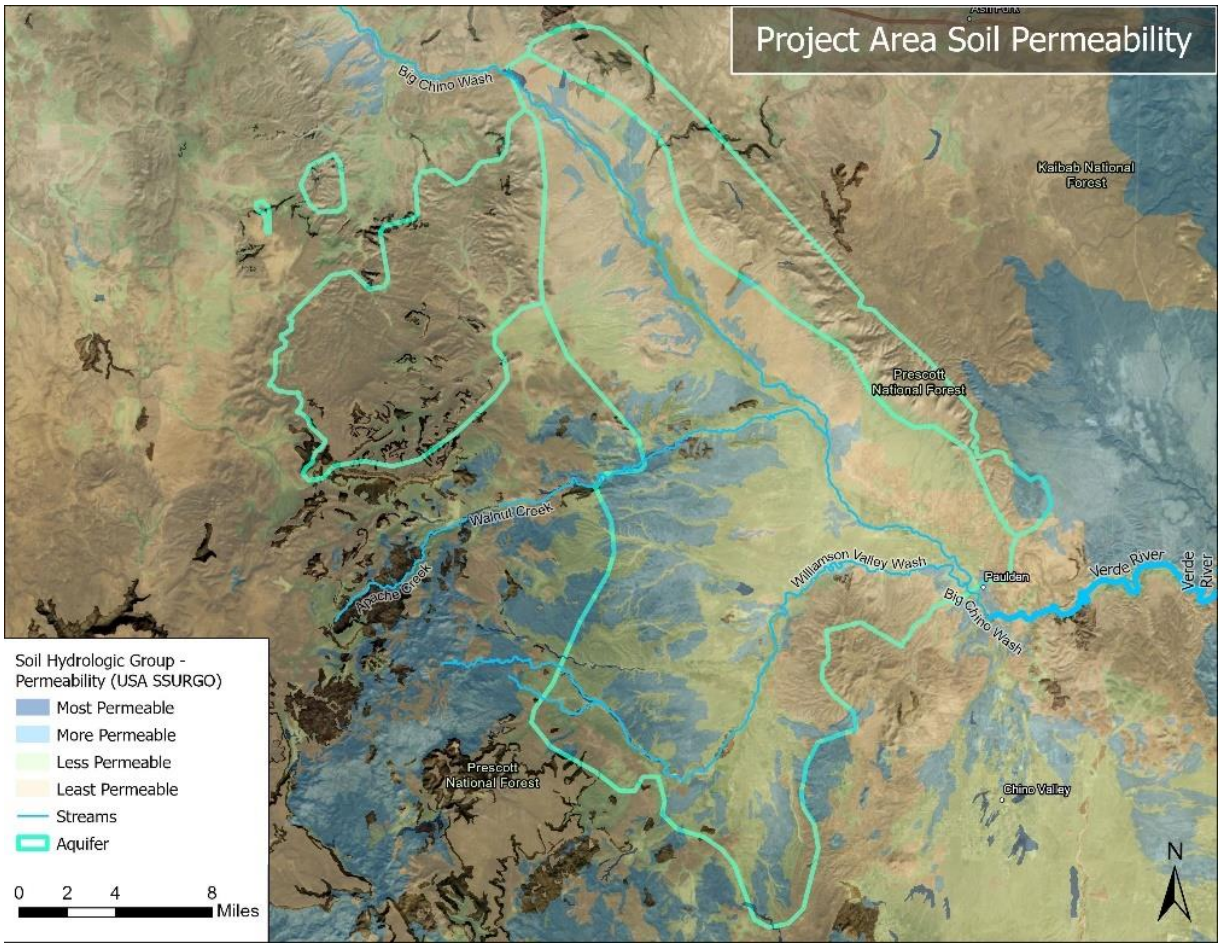

Figure 7 USA SSURGO soil hydrologic groups related to permeability zones in the project area.

Grassland Condition

The Big Chino-Williamson Valley watershed is a critical ecological area supporting a significant portion of Central Arizona's grasslands. The watershed spans two biotic communities, including the Great Basin Grassland and Great Basin Woodland as classified by Brown, Lowe and Pace (Brown et al., 1979). Similar native grass species are found across the biotic communities and are crucial to the health of the ecosystem in this area. Native grasses play a significant role in soil stabilization and water infiltration. Some native grasses in the area include species such as Blue grama (*Bouteloua gracilis*), Sideoats grama (*Bouteloua Curtipendula*), Indian ricegrass (*Achnatherum Hymenoides*), Three-awn grasses (*Aristida* Purpurea), Galleta (*Pleuraphis Jamesii*), Junegrass (*Koeleria cristata*), Alkali Sacaton (Sporobolus Airoides) and Prairie Dropseeds (*Sporobolus*) (Krzysik, 2011; SIEnet Portal Network).

Invasive grass species pose threats to the ecological balance of the watershed. Invasive species often outcompete native grasses, especially in disturbed areas, and can contribute to increased fuel loads and fire risk. Invasive grasses gain competitive advantage over native grasses by establishing early growth, allowing them to dominate the landscape before the native grasses have fully developed. Some dominant non-native grasses such as Red brome (Bromus Rubens), Ripgut Brome (Bromus Diandrus) and

Cheatgrass (Bromus Techtorum) have been identified as problematic in the region (Field Guide for Managing Red Brome in the Southwest; SIEnet Portal Network).

Grassland condition in the Big Chino-Williamson Valley Watershed was assessed in two previous Arizona studies by TNC and an international study by USFWS and partners. TNC's 2003 study assessed grassland extent and condition in Arizona, New Mexico, and Northern Mexico (Gori and Enquist 2003). In 2008, TNC created a statewide dataset of Arizona's natural infrastructure by compiling statewide and regional data sources (Majka et al. 2010). This region was also included in USFWS' Central Grasslands Roadmap (USFWS 2022). Data from the 2003 TNC assessment and the USFWS Central Grasslands Assessment Map studies on grassland condition are shown in Figure 6 below; not shown is TNC's Arizona Natural Infrastructure study, which delineates sensitive biological areas and management priorities for the organization. This study highlighted the Big Chino-Williamson Valley Watershed as a conservation priority.

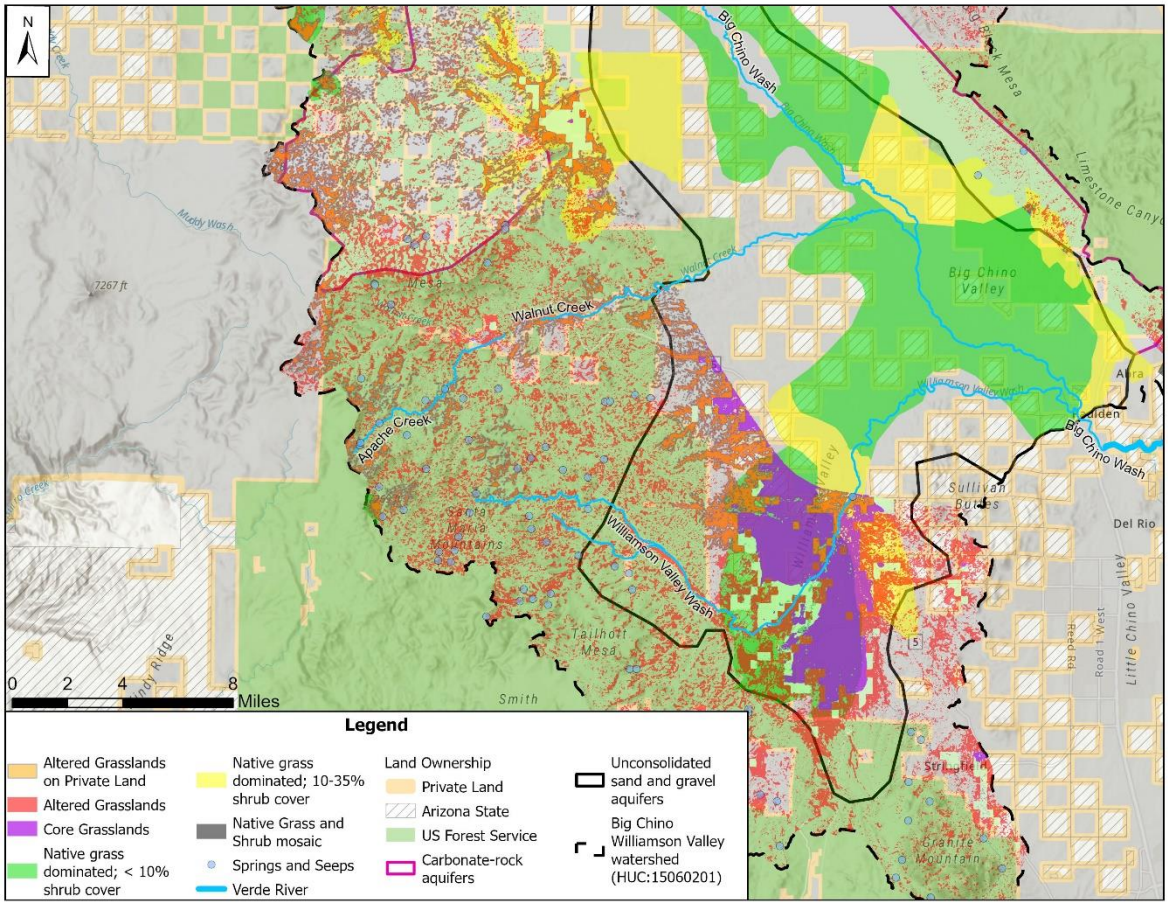

Figure 8 Overview of the project area with data from past analyses on grassland health. Altered grasslands and core grasslands are data from the USFWS Central Grasslands Roadmap and native grass/shrub cover are from the TNC Arizona grasslands assessment

A past spatial assessment of grassland extent and condition in the Arizona, New Mexico, and Northern Mexico mapped native grasslands and the condition of encroaching woody vegetation (Gori and Enquist 2003). Native dominated grasslands and those grasslands with a low shrub cover in this study, that overly the Big Chino aquifer are high priorities for addressing headcuts and gullies emanating from the Big Chino Wash and its tributaries. Watershed restoration work in these areas will benefit groundwater recharge and grassland productivity. Overly dense drainage networks in a watershed lead to increased erosion and reduce the cover of native grasses that could resist erosion and provide valuable forage. Vegetation management in these areas can help to increase surface flows, reduce evapotranspiration loss, and increase grass production.

To assess recent changes in grassland condition and widespread juniper removal efforts in the project area, we utilized NDVI from 2021 National Agriculture Imagery Program (NAIP) aerial imagery as shown in 7. The figure shows the past studies on grassland conditions compared to 2021 aerial imagery transformed to display Normalized Difference Vegetation Index (NDVI). From this image, we can see how the native grass-dominated, core grasslands, and altered grasslands spatial data from past studies compare to near current conditions.

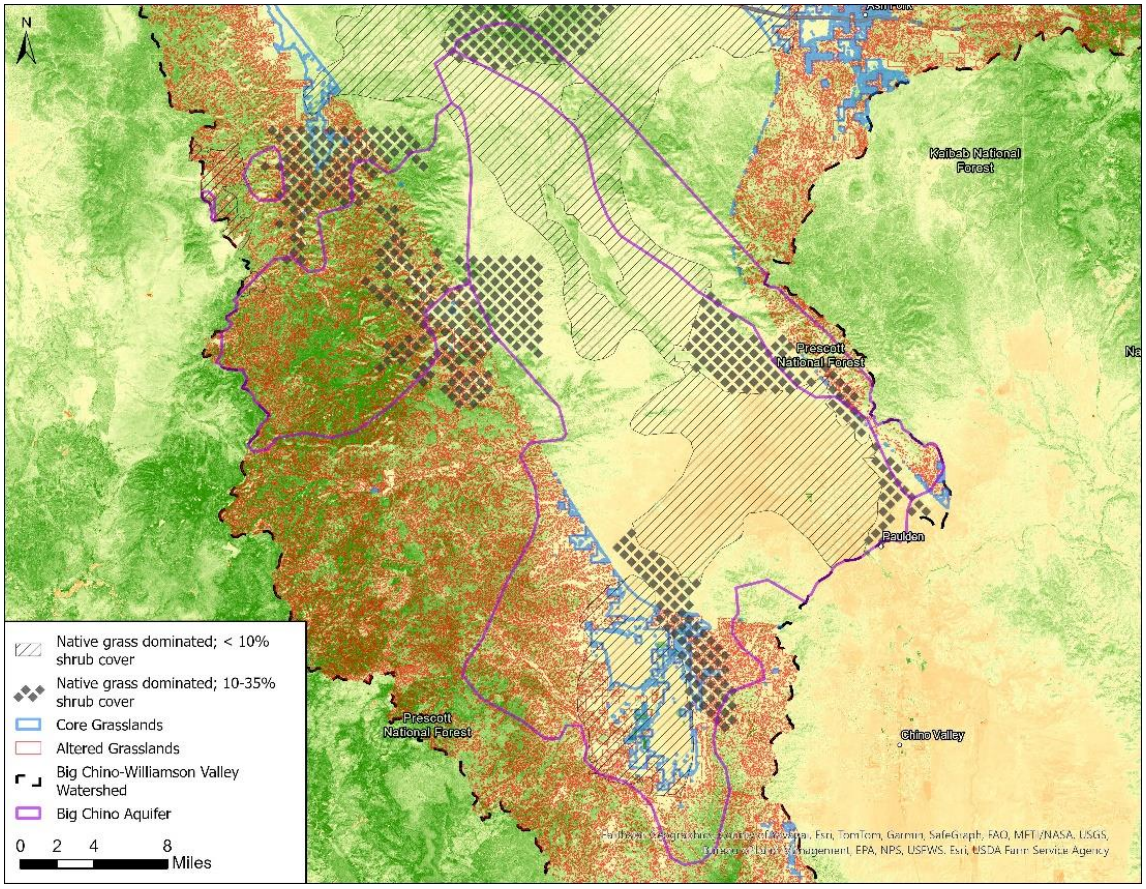

Figure 9 Normalized Difference in Vegetation Index (NDVI) visualization of 2021 NAIP imagery showing the distribution of green vegetation compared to past studies on grassland conditions.

A more extensive spatial analysis of grassland conditions was conducted to assess changes in NDVI over time from 2017 to 2024, utilizing 10-meter resolution multispectral satellite imagery from Sentinel-2. NDVI serves as an indicator of plant health, quantifying vegetation greenness. It is derived from vegetation spectral reflectance measured by satellite sensors, which show the presence and condition of plants or trees. By analyzing these peaks and subsequent browning, we can distinguish between native and non-native grasslands within the watershed. Seasonal growth patterns differ for native and non-native grass species. Native perennial grasses are more responsive to summer monsoon precipitation and reach peak productivity during August and September (Cable, 1975). Non-native grasses complete their life cycle earlier in the year, during the months of March and April and begin to brown out late spring to early summer (May-June) as temperatures rise (AZ Invasive Plants). NDVI values for non-native grasses will peak earlier in the year compared to native grasses.

Sentinel-2 imagery was used to analyze NDVI values for selected spring, fall, and winter months from 2017 to 2024. NDVI values range from -1 to 1, indicating vegetation greenness by comparing the differences between the infrared and red-light bands. Green vegetation reflects more infrared and absorbs more red light, while brown or less healthy vegetation reflects less infrared and more red light. High NDVI values indicate lush, green vegetation, while lower values suggest browner, less healthy vegetation, and negative values signal non-vegetated surfaces such as water or bare soil. The average seasonal NDVI values offer insights into the distribution of native and non-native plants across the landscape. Figure 10 presents the mean NDVI values for the Big Chino-Williamson Valley watershed at the HUC 12 subbasin level for spring, fall and winter seasons across the years of 2017-2024. In general, higher NDVI values are noted during the fall and winter seasons compared to spring, when non-native grasses and plants are at peak production. From this analysis, we can infer that the native species are well adapted and established in certain areas of the watershed despite the prescence of invasive species in the area.

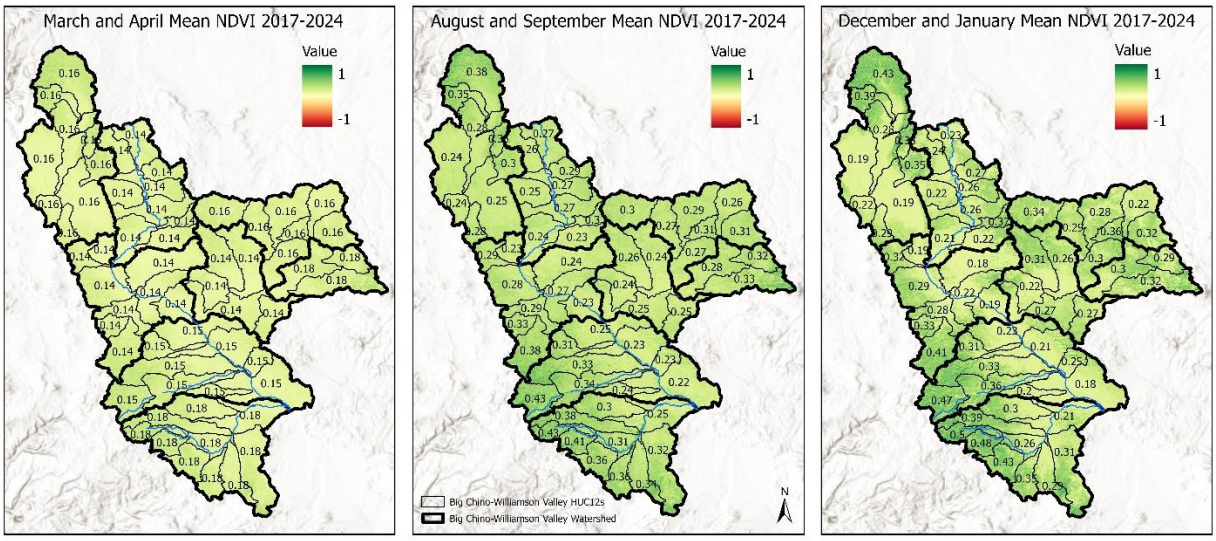

Figure 10 Comparison of mean NDVI values for the Big Chino-Williamson watershed at the HUC 12 subbasin level for selected spring, fall and winter months showing vegetation changes from 2017 to 2014.

However, it is essential to recognize that NDVI values and the observed distribution of plant greenness are influenced by climate conditions, particularly precipitation patterns. Arizona receives the majority of annual precipitation during two distinct seasons: summer monsoon season and winter. Approximately 60-80% of annual precipitation falls between June and October during the monsoon season (Prein et al., 2022). These precipitation patterns, characterized by irregular intervals of rainfall and dry spells, play a crucial role in determining the greenness and overall health of vegetation. Figure 11 offers a comparative view of vegetation changes over time from 2017 to 2024 for selected months during spring, fall and winter.

The presence or absence of greenness observed in 2017 and 2024 informs us where plants are thriving or struggling. Climate is one very influential variable affecting the health and condition of the grasslands in this area, but other factors such as grazing can be additional factors. Since 1995, Arizona has experienced a trend of below-average precipitation in 17 of the past 26 years, coupled with rising temperatures (Frankson et al., 2022).

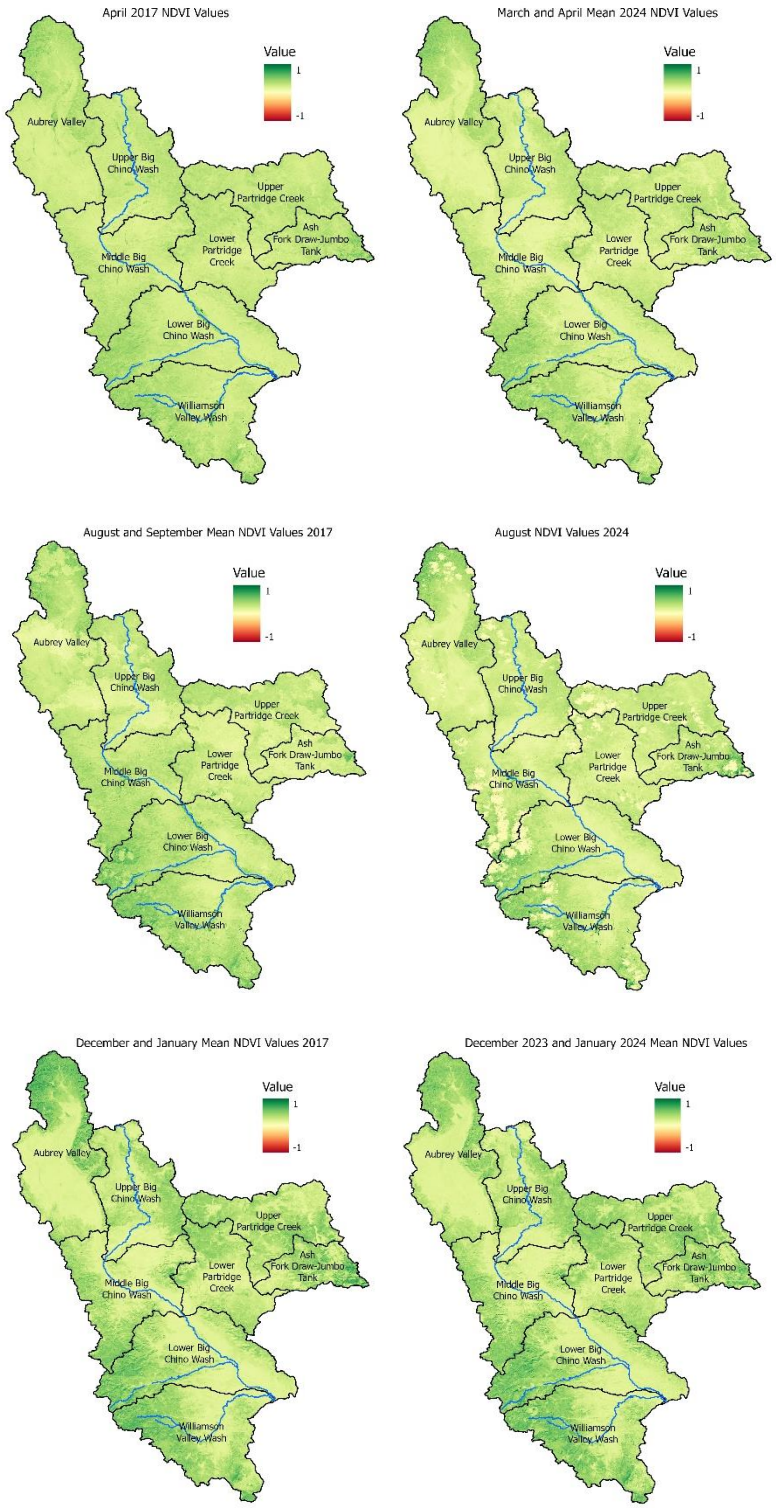

Figure 11 Vegetation changes over time from 2017 to 2024 for spring, fall and winter months.

In comparing NDVI imagery from 2017 to 2014 as shown in Figure 10 above, we can see vegetation change in the watershed as juniper removal occurs and as grasslands in the Big Chino Valley are losing greenness. This change in vegetation is particularly evident during the month of August 2024, where large areas of vegetation have a noticeably lower NDVI values compared to the level of greenness of surrounding vegetation. The differing levels of greenness in certain areas may be attributed to Juniper removal efforts in the watershed. These analyses provide a finer spatial resolution to past assessments at the state and national scale and provide a replicable metric for future monitoring. From a management perspective, these data generally agree with past studies on grassland conditions. And from an operational standpoint, collaboration in the region will be determined by relationships with individual landowners and agencies.

Stakeholders and Potential Projects

Our original project boundary was the extent of the Big Chino Aquifer and we focused on surface ownership within the aquifer extent. We examined land ownership in the Big Chino-Williamson Valley Watershed to find large parcels that overlap with our priorities of grassland and watershed health. To concentrate our efforts, we filtered parcels to those greater than 100 acres and focused on areas with the potential to improve grassland and watershed condition; these large parcels and land use categories are shown in Figure 12. Land ownership is split amongst Municipal, State, Federal, and private lands. As an initial selection, we selected landowners with large, contiguous land tracts to look for potential work areas.

To find opportunities for grassland and watershed restoration we examined aerial imagery to identify headcuts, channel instability, areas for vegetative treatments, and examined lands held by stakeholders who were engaged in our outreach efforts. We held a series of stakeholder engagement meetings and TNC hosted a field trip to visit different areas near the Upper Verde River headwaters. The first meeting was focused on agency stakeholders and included representatives from the Federal, state, municipal, county, and private sectors. We also held a series of one-on-one meetings with specific stakeholders. A list of entities that we engaged with are shown in Table 1.

Table 1 Entities active in the stakeholder engagement process

Entity	**Entity Type**	**Engagement**
Prescott National Forest (PNF)	Federal	Agency stakeholder meeting, follow up meeting with TNC
Kaibab National Forest (KNF)	Federal	Agency stakeholder meeting
Arizona Game and Fish Department (AZDGF)	State	Agency stakeholder meeting, TNC Upper Verde Headwaters field trip
Natural Resources Conservation Service (NRCS)	Federal	Agency stakeholder meeting
Arizona State Land Department (ASLD)	State	Agency stakeholder meeting, TNC Upper Verde Headwaters field trip

Arizona Department of Forestry and Fire Management (AZDFFM)	State	Agency stakeholder meeting
City of Prescott	Municipal	Agency stakeholder meeting, follow up meeting with TNC and NCDE, TNC Upper Verde Headwaters field trip
Yavapai County Flood Control District (YCFCD)	County	Agency stakeholder meeting, follow up meeting with TNC
Yavapai Prescott Indian Tribe (YPIT)	Tribal	Engagement with TNC and NCDE on other projects
Salt River Project (SRP)	Utility	Agency stakeholder meeting, TNC Upper Verde Headwaters field trip
Town of Chino Valley	Municipal	TNC Upper Verde Headwaters field trip
Central Arizona Land Trust	Non-profit	Agency stakeholder meeting, TNC Upper Verde Headwaters field trip
Land Advisors Organization	Private	Agency stakeholder meeting
Abra Water Company	Utility	One-on-one meeting
Bar Triangle Ranch	Private	One-on-one meeting

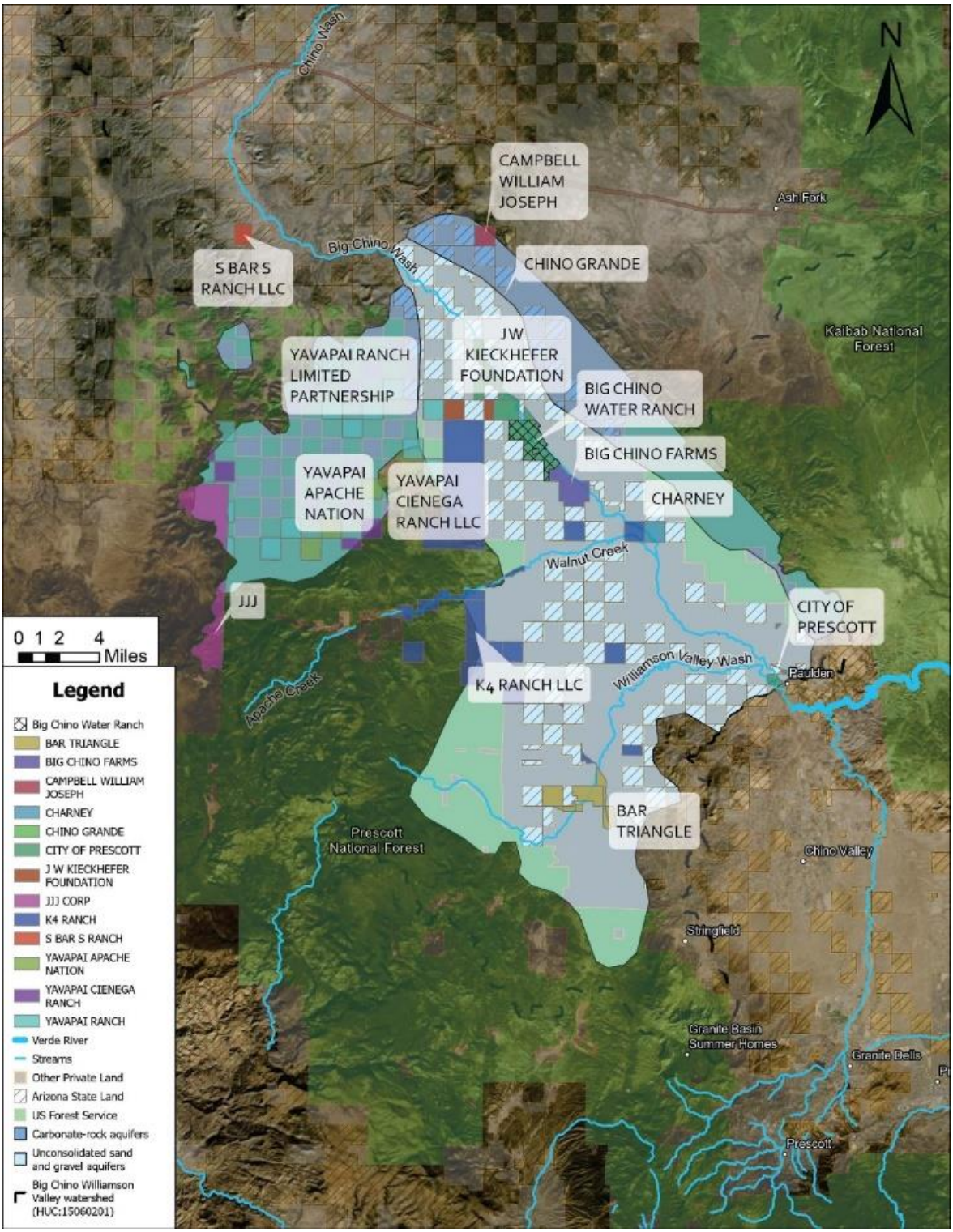

Figure 12 Overview of the project area showing landowners with large parcels.

Agency Stakeholders

Prescott National Forest (PNF)

The PNF covers most of the southwestern edge of the Big Chino-Williamson Valley Watershed. The area is mostly upland pinyon/juniper woodlands. There is a planned burn in the PNF near Yavapai Ranch as well as ongoing mechanical thinning and a planned land swap with the Yavapai-Apache Nation. PNF has three projects in the watershed which are described in the active projects section later in this report.

Kaibab National Forest (KNF)

The KNF spreads across the northern part of the Big Chino-Williamson Valley Watershed but does not overlap with the aquifer. Much of it drains into Big Chino Wash. A grassland restoration and juniper thinning project is proposed near Rattlesnake Wash, which is outside the aquifer boundaries but drains into the Upper Verde River. While this project does not overlay the Big Chino aquifer, it is an important project to include for habitat connectivity.

Figure 13 Area for proposed thinning + grassland restoration project in the KNF

Arizona Game and Fish Department

The Arizona Game and Fish Department (AZGFD) manages habitat and take restrictions for Arizona's fish and wildlife. They work off performance-based funding which must show a direct benefit to fish or wildlife. They have done some antelope corridor work in the middle to upper Big Chino Wash towards Ash Fork, working with K4 Ranch. AZGFD is also working with private landowners including the CV, CF, and K4 Ranches to install solar-powered water sources. Their work to convert stock tanks to solar-pumped off-channel tanks will help channel stability by moving livestock and wildlife up and out of the

channel when water is available. AZGFD is also working on mechanized land treatments and habitat improvements, including large-scale juniper removal. Because their funding is performance-based and must show direct benefits to wildlife, coordinating work with AZGFD should focus on wildlife habitat benefits. Juniper reduction projects are a common habitat improvement project to promote grass production by reducing evapotranspirative loss, potentially increasing surface runoff and reducing soil moisture competition.

Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS) works with landowners to fund and implement approved conservation practices. We met with two local staff at our agency meeting, and they do not have many watershed restoration projects in Big Chino but they do have many ongoing projects in the middle Verde Valley. They have some projects in Seligman and on the western side of Big Chino Wash focused on brush management and juniper removal. These projects were funded under the past Northern Arizona Grasslands Initiative Regional Conservation Partnership Program (RCPP). There are opportunities for NRCS to support more work in the region, using NRCS-approved practices, which include some channel stabilization practices. NRCS stated at the meeting that brush removal is always ranked high among rancher's needs. Landowners must approach NRCS for funding, it cannot be the other way around.

Arizona State Land Department/Arizona Department of Forestry and Fire Management

The Arizona State Land Department (ASLD) partnered with TNC to secure land and legislation for the new Del Rio Springs State Park and Sullivan Lake State Park to protect the historic character and resource values near the headwaters of the Upper Verde River. ASLD also owns land in the checkerboard sections in the upper part of our project area. ASLD administers grazing leases on state lands and has an interest in grassland and watershed restoration. Their existing projects are focused on forest management through juniper removal and prescribed burning through the Arizona Department of Forestry and Fire Management. In our Agency Stakeholder meeting, they said that they are interested in working with USFS and private landowners to extend treatments across land boundaries, i.e., the checkerboard parcels near the Depot 89 store and adjacent to newly acquired state park lands.

City of Prescott

The City of Prescott (Prescott) has multiple landholdings in the Big Chino-Williamson Valley Watershed, including property for the proposed Big Chino Water Ranch and next to the new Lake State Park (14). Prescott is interested in channel stabilization, invasive species management, and headcut repair on their parcels. They are leasing their Big Chino Water Ranch land for grazing to a single lease and mentioned that they are interested in a site visit to look at specific work areas. We identified multiple incised channels and headcuts advancing through the Big Chino Water Ranch property.

Figure 14 Parcels owned by the City of Prescott at the confluence of Williamson Valley Wash and Big Chino Wash.

Yavapai County Flood Control District

The Yavapai County Flood Control District (YCFCD) operates a network of live stream gauges throughout the watershed and has plans to develop flood mitigation measures in Big Chino Wash. These plans are still in the design/approval phase and are discussed in the active projects section later in this report.

Yavapai-Prescott Indian Tribe

The Yavapai Prescott Indian Tribe (YPIT) has an active watershed restoration planning project in their portion of the Granite Creek sub-basin and is in the process of contracting the implementation this summer. Restoration work will consist of low-impact design techniques, e.g. one-rock dams and Zuni bowls constructed higher in the watershed to stabilize drainages flowing to Granite Creek. The Tribe is also contracting NCDE for an erosion prioritization study of the entire reservation and off-reservation trust lands, to plan forthcoming watershed restoration work.

Salt River Project

The Salt River Project is partnering with TNC and NRCS on the "Upper Verde River Watershed - Aquifer Protection and Resilient Grassland Conservation Strategy," an RCPP funded project. The project commits $22.4 million towards the preservation of up to 20,000 acres of private lands overlying the Big Chino Aquifer. SRP committed $5M toward the program. SRP, Prescott, and the Town of Prescott Valley are monitoring and modeling the groundwater hydrology of the Big Chino sub-basin. SRP maintains a network of automatic flow monitoring cameras (flowtography) and stream gages throughout the watershed as part of this effort.

Potential Projects and Work Areas

Based on our assessments and meetings with stakeholders we've identified project areas with potential to restore headcuts, plug and spread incised channels, and spread water over the grasslands. Projects should be prioritized by balancing the severity of degradation, potential values at risk, the potential increase in ecological value or ecosystem services, and ultimately will occur where landowners are open to engaging with TNC and partners. We held a series of stakeholder engagement meetings and had positive interactions with many potential partners. There are opportunities to support Federal and State vegetation management or fire reintroduction projects by extending work on to private land. The restoration practices in Table 2 can be readily used on private lands and have potential to request NRCS funding for approved practices.

The natural hydrology in these sites has been altered in many ways. Flows have been diverted towards tanks, berms have been pushed up to protect private property from flood flows, outlets like culverts typically result in headcuts by forcing the water into a narrow inlet and outlet, and the native grass that could resist these typical flows has been intensely grazed and is losing its ability to resist shear stress. These conditions have been documented in many Southwestern watersheds and led to degradation of watershed condition and riparian health since Euro-American settlement (Neary et al 2012).

The first restoration priority in these areas is to arrest advancing headcuts then focusing on channel restoration practices to prevent further incision. In areas with good native grass cover and sufficient valley widths, plug and spread restoration could be used to bring water up out of the incised channels and spread over the grassland. Grade control structures including buried rock sills, weirs, and rock rundowns can be installed at road crossings or to repair headcuts.

Table 2 Restoration project types, benefits, and practices

Project Type	**Benefit**	**Structures/Practice**
Headcut repair	Stop upward advancement and continued soil/grassland loss and channel incision	Zuni bowl, rock rundown, plug and pond
Bank stabilization	Reduce sediment supply and prevent bank failure and loss of grassland habitat	Bank revetment, erosion control fabric, seeding/planting, toe rock
Grade control	Preventing further incision, downcutting	Wiers, sills, rock rundown
Vegetation management	Increase grass productivity and vigor by reducing competition for light, water, nutrients. Reducing water use and evapotranspiration losses from encroaching woody vegetation	Juniper management, exotic species management, native grass seeding

Induced meander	Training overly straight channels to a stable meander pattern to increase lateral stability	Channel deflectors, j-hooks, rock vanes, rock and picket baffles

Williamson Valley Wash

A photo of a headcut emanating from Williamson Valley Wash and threatening Williamson Valley Wash road is shown below in Figure 15. Another example of the same situation and threatening a road culvert is shown in Figure 16. Headcut repair would require arresting further advancement and installing grade control to step water down in elevation from the valley elevation to the bottom of the channel. Designs would require further topographic surveys, but potential solutions include stopping the headcuts' upward advancement with a buried rock sill, sloping banks to stable grade for vegetation to establish, and installing a grade control structure like a rock run-down. The incised channels could potentially be treated with a plug-and-spread, where sediment and rock plugs would be built in series through the incised channel and as water collects behind the plugs it would spread on to the wider grassland and then spill over to the next plug. This general treatment of headcut repair and channel stabilization could be applied throughout the watershed and would serve multiple purposes. First, bank erosion and downstream sedimentation would be reduced. Second, plug and spread would minimize fill material needed and would spread water up out of the channel and back over the wide grassland. Third, by slowing water in the channel and spreading it over the grasslands, the inundation area and time will be increased which will contribute towards groundwater recharge.

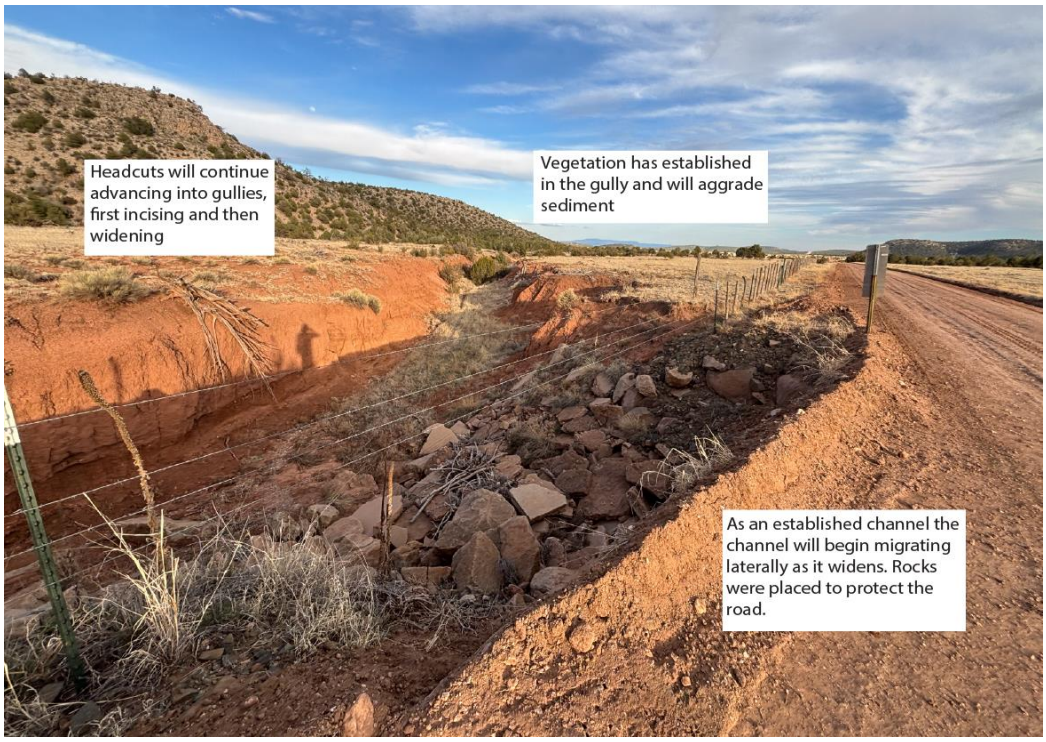

Figure 15 A headcut coming from Williamson Valley Wash and endangering the road

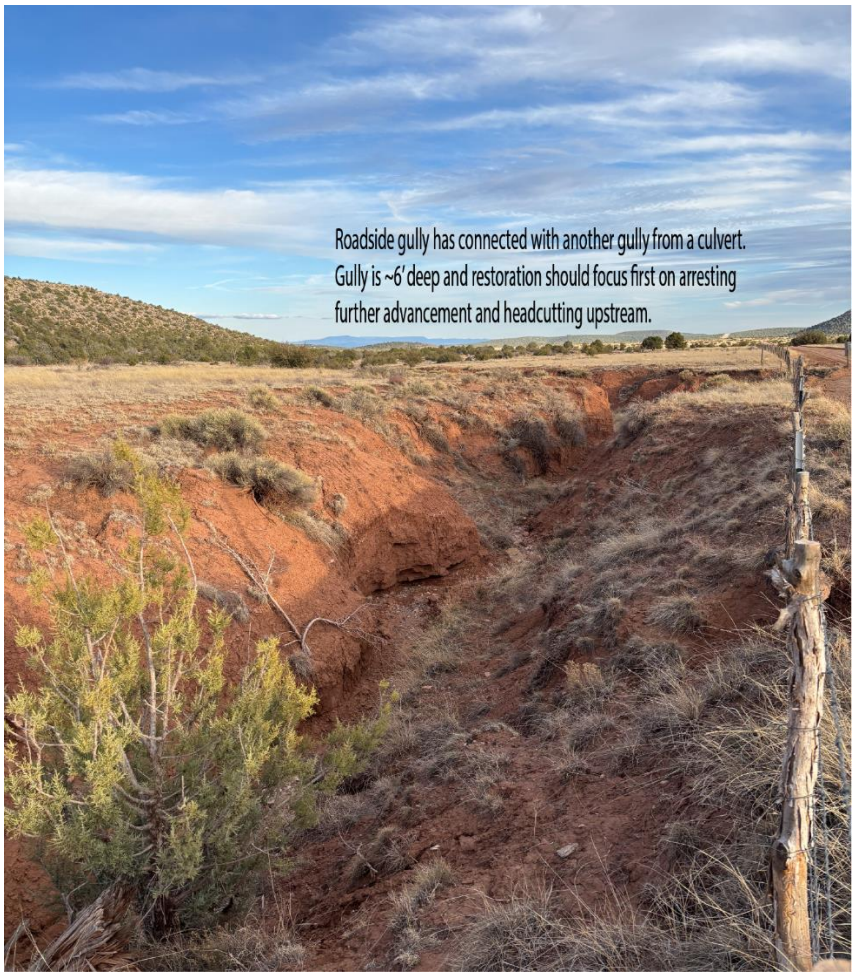

Figure 16 Headcut in Williamson Valley Wash threatening the road culvert. depth is approximately 6-10 feet deep.

Mud Tank Wash

Mud Tank Wash is a high priority for restoration to benefit groundwater recharge because it flows over unconsolidated alluvium, which has the highest infiltration rate of the geologic groups overlying the Big Chino Aquifer. Focusing treatments in these areas to keep sheet flow spread wide over dense native grassland, will increase the potential for aquifer recharge and forage production. There are several headcuts in the wash, some which are crossing boundaries of Federal and private land. Similar circumstances are seen upstream, and along Indian Springs Wash which feeds into Mud Tank Wash. Most of these areas are on K4 Ranch, but some cross federal lands. A combination of headcut repair and channel stabilization practices including bank sloping, seeding, rock structures, and channel reshaping could potentially stabilize this channel, reduce soil loss, increase forage production, and enhance aquifer recharge.

Figure 17 A closer look at the advancing headcut complex in Mud Tank Wash from the previous image.

Big Chino Wash

Big Chino Wash is highly incised and headcuts will continue advancing upstream and incising until they meet the base elevation of the channel. First, forward advancement of headcuts needs to be arrested by increasing the channel's resistance, i.e. armoring with a Zuni bowl or by reducing the potential erosion by modifying slope or depth, i.e. sloping banks or building a plug and pond structure. Big Chino Wash is so deeply incised, observed up to 15 feet in some areas during the TNC Upper Verde Headwater field trip and in some areas (Figure 18) it has been so deeply incised that the channel is now stabilizing and forming a new floodplain within the entrenched channel. While this may be a state of dynamic equilibrium for the channel morphology, it negates the ability of large flood flows to access the floodplain, infiltrate into the soil, and promote grassland health. Plug and spread treatments on private land i.e. the land purchased by the City of Prescott for the Big Chino Water Ranch are opportunities to spread flood flows up and out of the incised channel to increase benefits and reduce bank erosion. Work in this area is a very high priority for aquifer recharge and to maintain native grass dominated pastures. Photos of headcuts and gullies in the Big Chino Wash are shown in Figure 18. Head cutting and channel destabilization in the Big Chino Wash are the primary concerns; examples are shown in Figure 19 and Figure 19. This stretch of the wash crosses Chino Grande Ranch and state land. This prime recharge area overlays sandy unconsolidated alluvium upstream of Paulden.

Figure 18 Photo showing the depth and longevity of incision in Big Chino Valley area. Although the wash is highly incised it is showing signs of stabilizing and creating a new floodplain in the bottom of the entrenched channel.

Figure 19 An example of multiple hydrological modifications to Big Chino Wash and advancing headcuts.

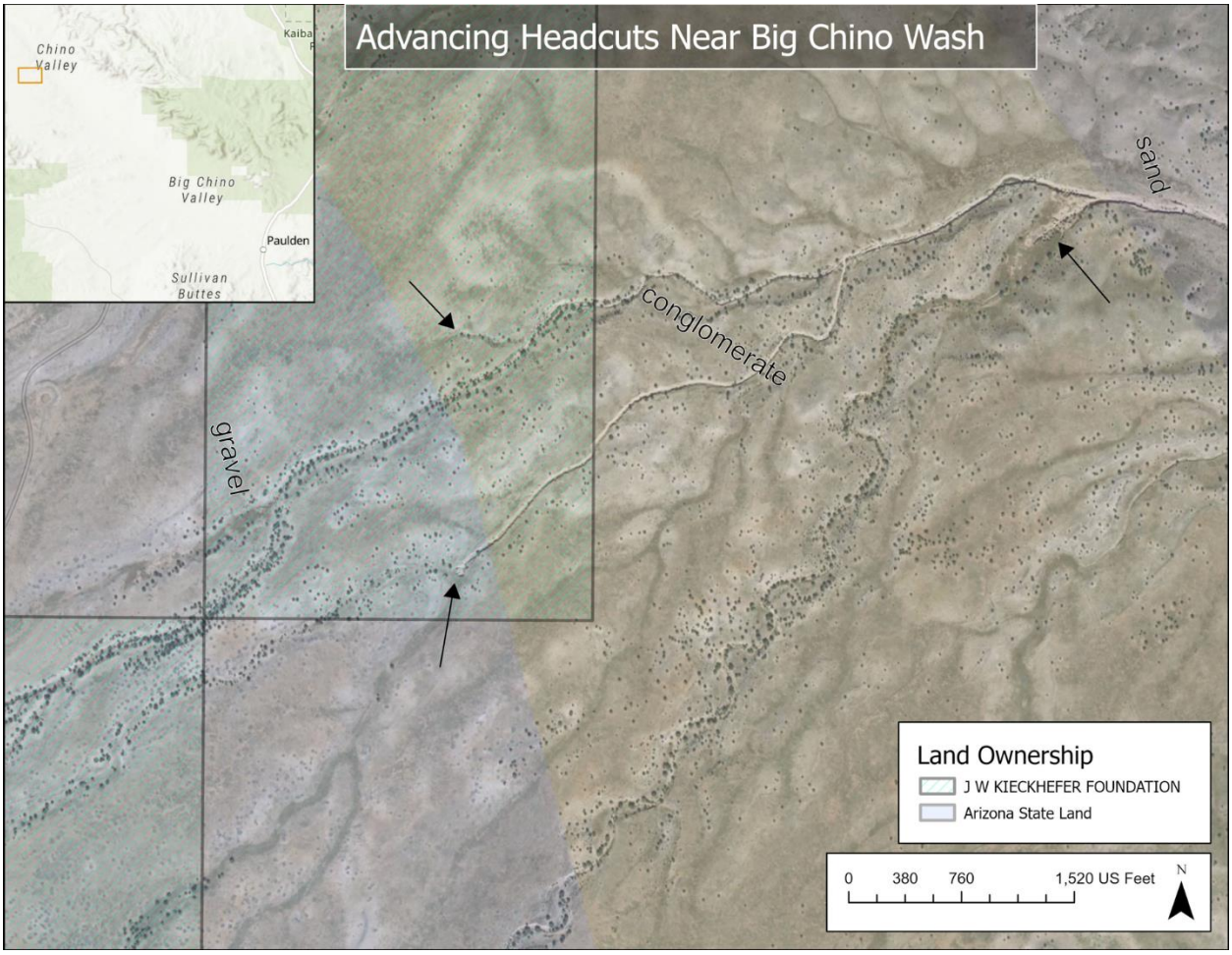

Figure 20 A headcut advancing from Big Chino Wash through highly erodible and porous sand and gravel zones.

This headcut has advanced through grasslands into areas overlaying unconsolidated gravels near Big Chino Wash. Structures to arrest headcut advancement, i.e., buried rock sills should be used in combination with grade control (i.e. cross-vane weirs) or meander inducing structures (i.e. j-hooks) to reduce the slope and increase the sinuosity, thereby reducing bank erosion and increasing in-stream recharge. This headcut passes through land owned by the state, leased by K4 Ranch.

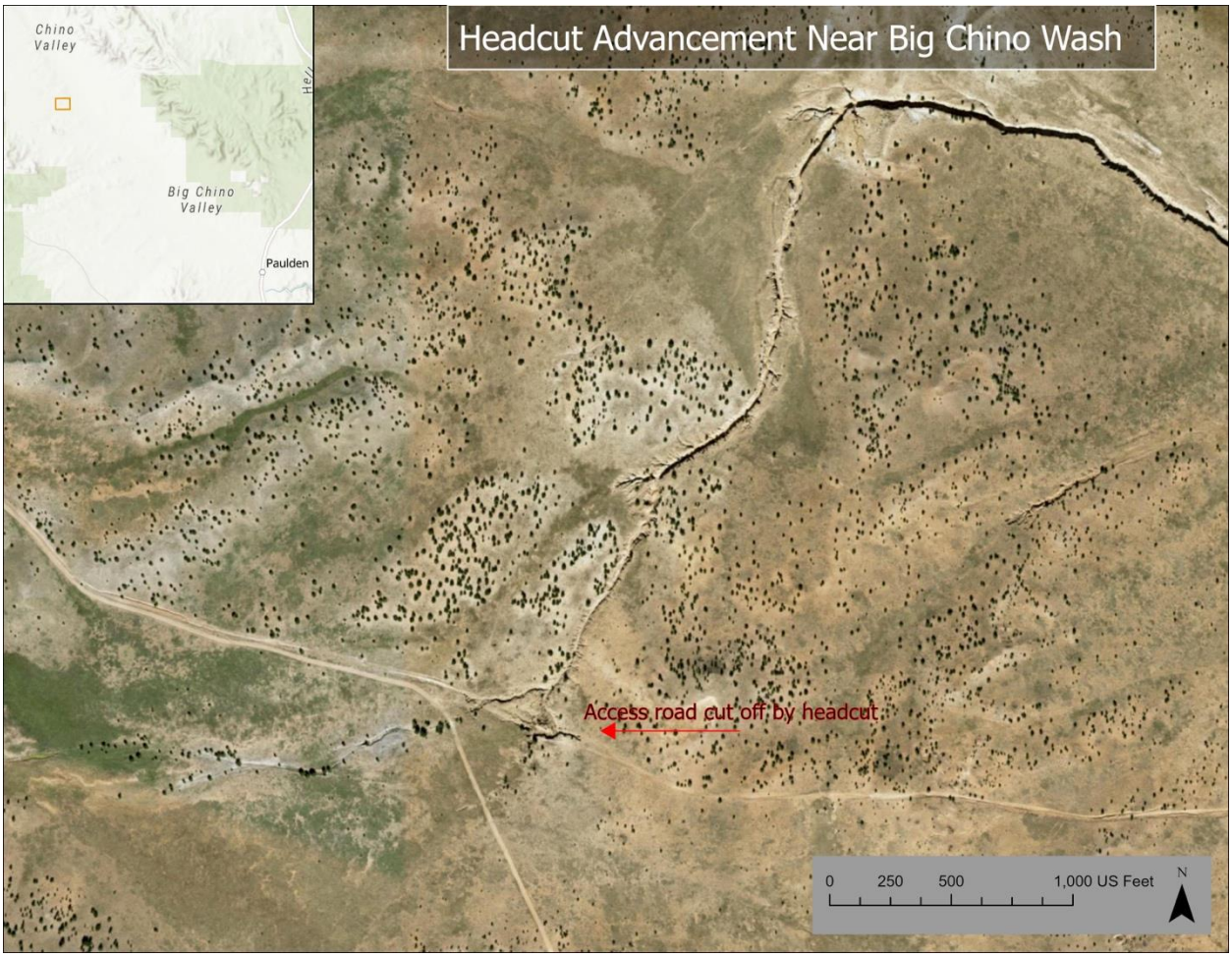

Figure 21 Example of a headcut advancing through K4 Ranch, near Big Chino Wash. The headcut is compromising the access road and moving into productive pasture.

Naturally Distributed Water Storage

Increasing groundwater pumping as residential density increases is contributing to groundwater depletion, reduced soil moisture, and reduced grassland productivity. Hydrogeological reports that were reviewed stated that current Active Management Areas (AMAs) and groundwater budgets may not reflect the lag in groundwater response to increased withdrawals and climate change over the last several decades. As a result, previously modeled and allocated groundwater budgets may change rapidly, and dramatically as lagged effects of withdrawals are reflected in groundwater measurements. AMAs such as Prescott's should plan to minimize use to account for these decreases in groundwater recharge and amounts. One strategy is recharging groundwater while also meeting other needs like reducing soil erosion, supporting surface water infiltration, and regulating water supply.

Naturally distributed water storage projects focus on enhancing groundwater recharge in aquifers, rather than diverting or impounding surface water. This approach has the advantage of reducing evaporative losses or volumetric loss from hard-to-detect pipeline leaks. By slowing water as it flows through the

watershed or spreading water over a larger area, these projects extend the inundation period and increase the potential for groundwater recharge. They also help reduce erosion by reducing depth and shear stress compared to confined flow within incised channels. Increasing the amount of water that spreads over the grasslands increases soil moisture and grassland productivity. Naturally distributed storage does not divert or impound surface water that would otherwise flow into channels, ensuring downstream users' water rights remain unaffected.

Distributed storage projects take on various forms including in-channel and out-of-channel watershed restoration practices. Channels follow a natural evolution over time as they incise, widen, and aggrade. Eventually they will reach a stable form, but this may take much longer than our human timelines and we may see massive erosion along the way. Channel stabilization and grade control practices are designed to help a channel through the evolution from incising or widening, back to a form with stable banks and bed slope. These concepts can be thought of as lateral and vertical stability. By assessing the channel's current condition and the hydrological/geomorphic factors that contribute to the current condition, we can design practices and structures to fit the problem at hand.

Incised and eroding channels concentrate overland flows which otherwise could saturate a larger area of grassland and contribute to shallow groundwater infiltration. Rock grade control structures, bank armoring, and meander-inducing structures can help stabilize channels laterally and vertically to reduce impacts to upland grassland habitats or working lands. Headcuts in grasslands will continue advancing upstream until they are repaired or arrested by a harder surface. Arresting and restoring headcuts mitigates the creation of new gullies and enhances the potential for water to disperse as overland sheet flows and saturate the grasslands. Streambed recharge plays a crucial role in recharging the underlying Big Chino Aquifer.

Structures or practice types depend on the size of the channel, contributing watershed area, and level of impairment. Small drainage issues like road drainage or small incised channels leading to a stock tank, for example, may be fixable with hand-built structures like one-rock dams or Zuni bowls. Larger channels typically require heavy equipment operations for bank sloping or building rock structures, due to the earthwork volume and the structure size needed to resist powerful flows. Meander-inducing structures including picket baffles or rock vanes paired with channel reshaping could be effective in major channels like Big Chino Wash, Williamson Valley Wash, and Walnut Creek to slow flows, reduce erosion, and improve channel stability. Channel restoration practices can also increase in-channel aquifer recharge.

Grazing Management

The Big Chino grasslands have been important grazing lands in Arizona and support a history of livestock ranching and farming. By nature, ranchers and farmers have soil and water conservation in mind because it sustains their way of life. For this report's purposes, conservation-minded grazing means finding compatibility between ranching heritage and conserving grasslands for the many benefits they provide to humans, animals, and the environment. Some ranchers in the valley including K4 Ranch are grazing less head per acre and grass-finishing on "sustainable grasslands". In this case, sustainable grasslands are branded as such due to active grassland restoration projects. By branding their beef as conservation-minded, they can command a higher market value to offset potentially higher production costs. The

Diablo Land Trust is a notable example of how multiple parties with distinct goals have partnered to conserve grassland while supporting livestock grazing.

Active land management practices such as those found in *The New Ranch Handbook* by Nathan Sayre and the Quivira Coalition advocate for managing animal impacts in both space and time. Active land management in this context means managing the timing, frequency, and intensity of grazing to allow the recovery of perennial grasses, and includes the following: allowing sufficient resting periods for grazed areas to fully recover; partitioning land into smaller pastures to account for cattle rotation with recovery periods; deciding animal days per acre that pastures have been supporting and what they may be able to support in the future; determining grazing periods by accounting for the number of pastures, and their resting period; and monitoring grassland condition, climate, and soil moisture to reduce stocking rates for bad years. All these practices will contribute to soil, seed, and grass conservation, which will help increase grass density, stabilize the landscape, distribute water storage, and maintain productive pastures.

Forest Management

Pinyon-juniper woodlands in the Big Chino-Williamson Valley Watershed can be managed for multiple resource benefits including fuel reduction, woodland productivity, reducing soil erosion, supporting surface water infiltration, regulating water supply, increasing carbon sequestration, and supporting wildlife habitat. Juniper removal has the potential to increase grass and forb cover, productivity, surface water runoff, and soil moisture. Runoff gains and soil moisture have been empirically shown to increase after the removal of woody encroachment on grasslands (Hibbert et al. 1981).

Reintroduction of a natural fire regime in concert with reducing grazing pressure, enhancing grassland conditions, and removing woody vegetation encroachment are all parts of a multi-phase fire reintroduction and vegetation management strategy. Low-intensity fires also support the cycling of nutrients that would otherwise come from soil amendments, i.e., phosphorus and nitrogen. In our stakeholder meetings, juniper removal as a potential treatment had the highest agreement amongst all parties. There are multiple active and planned juniper removal efforts by USFS, AZGFD, and AZSLD. While the financial and planning costs are high, expanding juniper removal and prescribed burning projects through multi-party cooperation could leverage the existing efforts into larger impacts.

Chaining is a typical practice for juniper removal and is effective but leaves a heavy impact on the soil and biota. Mastication is a newer technique that turns the juniper into mulch and is a preferred alternative. Multiple entry management strategies like lop, pile, and burn are the most time-intensive but are also the most comprehensive management strategies to reduce fuel and return natural fire frequency.

Wildlife Habitat

Pronghorn antelope (*Antilocapra americana*) are native to the Big Chino Valley and thrive in wide-open grasslands. They have adapted to avoid predators with fast running speeds and strong vision and prefer wide open savanna and grasslands as opposed to dense juniper woodlands. In addition to improving habitat structure for pronghorn, juniper removal increases grass and forb production to support grazing

wildlife and livestock. Antelope can coexist with cattle as they have low interspecific competition. Pronghorn primarily feed on forbs more than grasses and while they do intake water from forage, they do need drinking water, especially during environmental or biological stress periods (Tluczek 2012). Protecting large grassland landscapes in the Big Chino-Williamson Valley Watershed also protects essential habitat and migration corridors for wildlife like pronghorn.

Channel Restoration and Headcut Repair

Besides conveying water, natural channels also dissipate energy. As the water's energy is dissipated through a channel it will naturally form meanders and bars as energy is deflected from bank to bank. When a channel's natural form is restricted or modified by humans it tends to increase instability. Two common examples are earthen berms which push flows away from private property, and road culverts that concentrate a valley's wide flow to a single inflow and outflow. This instability is realized through bed scour and bank erosion.

Bed scour is a downward incision of the channel bed and bank erosion is the lateral widening of the channel. Over time, incision will cease, widening will occur, and when the channel is at a stable depth and width, the banks will begin to erode to form bars and create a meander pattern. This process of incising, widening, and accretion is known as Schumm's channel evolution model (Schumm et al. 1984). Big Chino Wash, Walnut Creek, and Williamson Valley Wash and their tributaries are deeply incised in many areas. Incised channels without grade control will lead to headcuts as water changes grade from the valley slope to the channel bed.

Headcuts occur in areas where the water quickly changes grade or substrate and will continue to advance upstream through a valley until reaching something unerodable like rock or when the head-cutting channel bed is at the same elevation as the main channel.

In other areas, the channel may have ceased incision and will continue to widen. As it widens and forms meanders, the channel will naturally scroll back and forth as it stabilizes. This is a natural process, but in the Big Chino Valley it comes at the cost of eroding grassland.

Figure 22 An advancing headcut in the Williamson Valley Wash Watershed

Fortunately, there are many potential solutions to reduce erosion, stabilize the channel, and repair headcuts. We can reduce the energy of the water in the channel with deflecting structures or we can change the shape of the channel to dissipate the energy more stably. When we cannot change the channel form, we can spread the water or potentially bring it up out of the channel onto a wider surface to reduce erosion and increase infiltration over a larger area. Examples of these projects are shown in Appendix B.

Active Projects

We worked with public agencies at two larger and three individual engagement meetings to identify active, proposed, and potential restoration projects overlying the Big Chino Aquifer and the surrounding areas where active work is ongoing. These projects are summarized in Table 3.

Table 3 Active watershed and grassland restoration projects

Agency/Landowner	Project Name	Project Type	Watershed	Active/Potential/Planned
Kaibab National Forest (KNF)	Hell Canyon	Fuel Reduction	Upper Verde	Active
Prescott National Forest (PNF)	Various Fuel Reduction Projects	Fuel Reduction		Active
Prescott National Forest (PNF)	Stringtown-Wash Pine Creek Low-Tech Process-Based Restoration (LTPBR) Assessment	Watershed restoration	Stringtown-Wash Pine Creek	Active
Prescott National Forest (PNF)	Stringtown-Wash Pine Creek Low-Tech Process-Based Restoration (LTPBR) Implementation	Watershed restoration	Lower Big Chino Wash, Big Chino Wash, Ash Fork Draw-Jumbo Tank Watershed, Upper Partridge Creek Watershed	Planned
Prescott National Forest (PNF)	Horse Wash Priority Watershed	Fuel Reduction	Wlliamson Valley Wash	Active
AZ Department of Forestry and Fire Management (AZDFFM)	Various Fuel Reduction	Fuel Reduction	Upper Big Chino Wash, Lower Big Chino Wash, Williamson Valley Wash	Active
AZ Department of Game and Fish (AZGFD)	Fuel Reduction and Habitat Improvement	Fuel Reduction, Habitat Improvement, Vegetation Management	Upper Big Chino Wash, Lower Big Chino Wash, Williamson Valley Wash	Active
Salt River Project (SRP)	Flowtography	Hydrologic Monitoring	Verde River	Active
Yavapai County Flood Control District (YCFCD)	Hydrologic Monitoring	Flow, Rainfall, and Weather Monitoring	Big Chino Wash,	Active

			Walnut Creek	
Natural Resource Conservation Service (NRCS)	EQIP Supported NRCS Practices	Vegetation management, alternative water sources	Middle Big Chin Wash, Lower Partridge Creek, Lower Big Chino Wash, Williamson Valley Wash	Active
Yavapai Prescott Indian Tribe (YPIT)	Granite Creek Restoration	Watershed restoration, erosion control	Upper Verde River	Active
Yavapai Prescott Indian Tribe (YPIT)	Reservation Wide Erosion Prioritization	Erosion control planning	Upper Verde River	Active
Yavapai Prescott Indian Tribe (YPIT)	Slaughterhouse Gulch Watershed Restoration	Watershed restoration, erosion control	Upper Verde River	Active
Yavapai Prescott Indian Tribe (YPIT)	Granite Creek LTPBR Implementation	Watershed restoration, erosion control	Upper Verde River	Active
City of Prescott/AZ State Land/TNC	Verde Springs State Park	Conservation area	Upper Verde River	Active

Kaibab National Forest

The KNF has a 973-acres grassland restoration project planned for FY2025 in Hell Canyon, a tributary to the Verde River above Perkinsville. KNF has supplied a shapefile of the project area, and it is just outside of the Big Chino-Williamson Valley watershed but is part of the Upper Verde River watershed.

Prescott National Forest

Stringtown Wash-Pine Creek Low-Tech Process-Based Restoration (LTPBR) Project

The Stringtown Wash-Pine Creek Watershed (SWPCW) is a priority watershed for PNF and NCDE was contracted for 5 miles of low-tech process-based restoration (LTPBR) assessment and design to reduce erosion and downstream sedimentation, and enhance in-stream recharge. The SWPCW is northwest of Prescott and sees moderate recreation use from off-highway vehicles (OHVs) and dispersed camping with moderate livestock utilization (Figure 45). In 2019, the USFS classified SWPCW as “functioning at risk” and developed a Watershed Restoration Action Plan (WRAP) to prioritize watershed improvement activities to manage sustained watershed impacts (USFS, 2019). According to the watershed analysis within the WRAP and on-forest monitoring, sediment eroded from USFS roads and watershed impacts

(namely wildfire) are negatively impacting the aquatic and hydrological resources of the SWPCW (USFS 2019, USFS 2022). As a priority watershed, PNF is working on closing and decommissioning roads within stream buffers and implementing in-channel restoration work. The Stringtown Wash-Pine Creek LTPBR project was designed by NCDE as a low-tech watershed restoration project utilizing non-engineered rock and log structures meant to be built by hand crews. An overview map of the project area and practices to be implemented are shown in Figure 23. Practices focus on stabilizing small drainages with rock structures, meander-inducing sediment accumulation with wooden structures, and reducing sedimentation from road runoff.

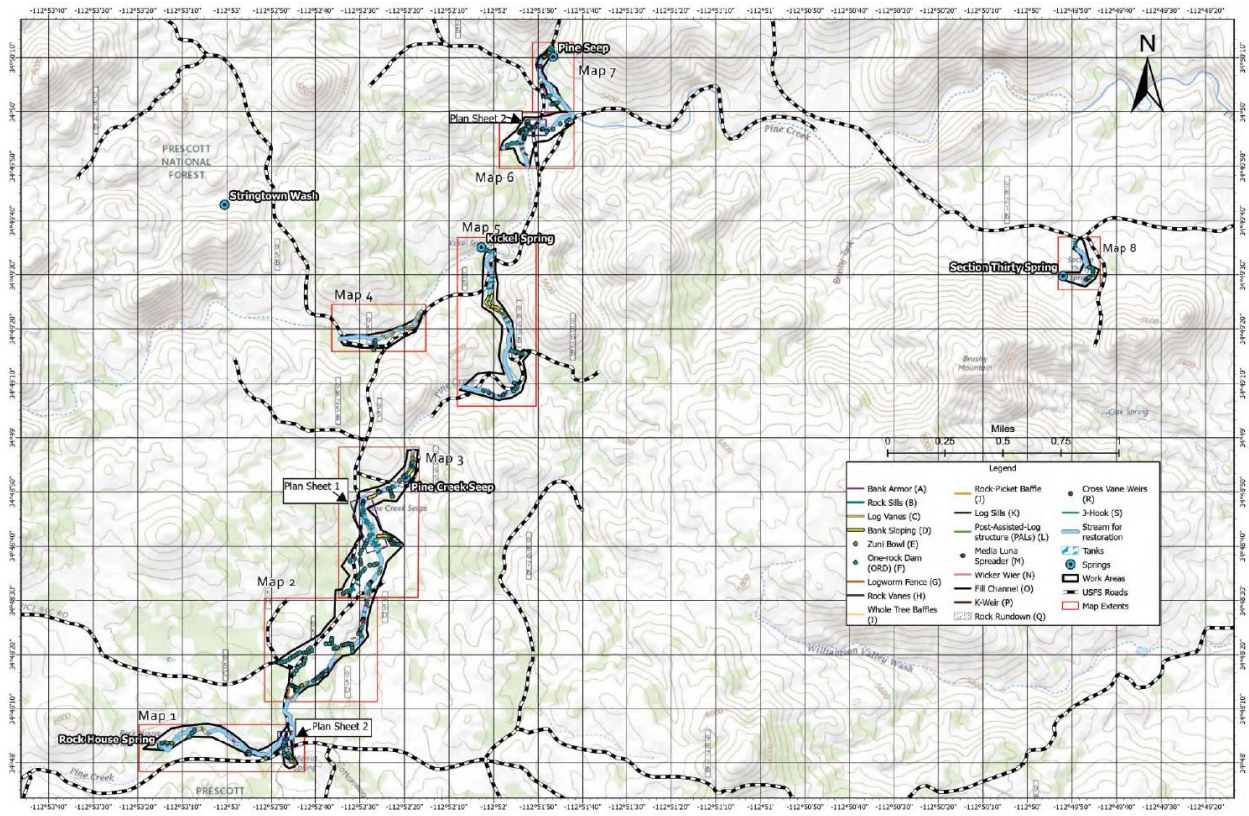

Figure 23 Stringtown Wash-Pine Creek LTPBR project with National Forest Foundation and PNF

Horse Wash

Horse Wash is identified as a priority watershed for PNF and will be a focus area over the coming years for watershed restoration work. PNF has not supplied other data at this time, but we expect their work plan will focus on channel stabilization and spring restoration in Horse Wash, Upper Tailholt Spring, Old Camp Spring, and Left Hand Spring. Project locations are shown in Figure 24.

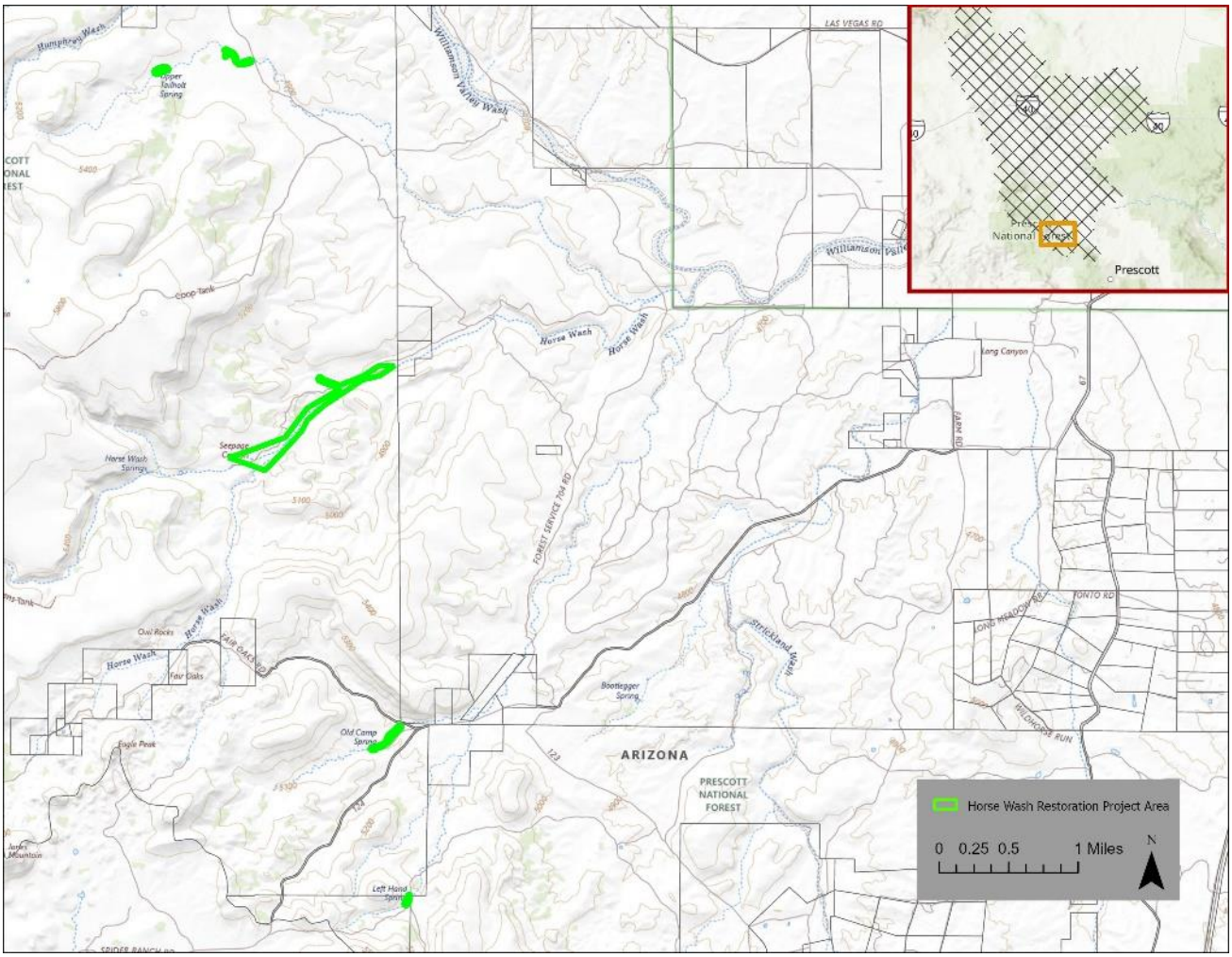

Figure 24 Restoration project areas in the Prescott N.F. Horse Wash Priority Watershed

Section 10 Tank Fuels Reduction

Section 10 Tank Fuels Reduction is a 7,590-acres project on the PNF and Yavapai Ranch private land. The project is already covered under a landscape environmental assessment for NEPA and the Chino Landscape Type 2 Prescribed Fire Plan. Project goals are to reduce fuel loading to restore a desirable stand structure, fire return interval, and fire intensity. This project aims to increase ecological resiliency by increasing fire frequency to remove woody and non-native invasive plants. Overall, the project will improve watershed, soil, and vegetation conditions through juniper removal and prescribed burning. A mix of mechanical juniper removal methods and low to moderate-intensity prescribed fire will be used to restore the stand structure and reduce hazardous fuel loads. The project summary from PNF states that a non-funded agreement will be needed with Yavapai Ranch to complete this project. A land swap with the Yavapai Apache Nation is mentioned in the project map provided by PNF and in our stakeholder meeting but is not specified in the Project Summary & Review document. As shown in the aerial view of the project area (Figure 25), channels in the project area appear to be incising into gullies and could

benefit from channel stabilization to reduce downstream sedimentation and further incision through the newly treated grassland.

Yavapai Ranch will be a partner in the PNF Section 10 Tank Fuels Reduction Project and benefit from juniper removal and prescribed fire. These treatments have potential to increase overland flows and grassland productivity. But with the highly dissected drainage system, heavy equipment operations will be more expensive, and any channel work proposed for this area would have a relatively low ecological benefit relative to the cost. These areas overlay unconsolidated gravel but have less permeable soils.

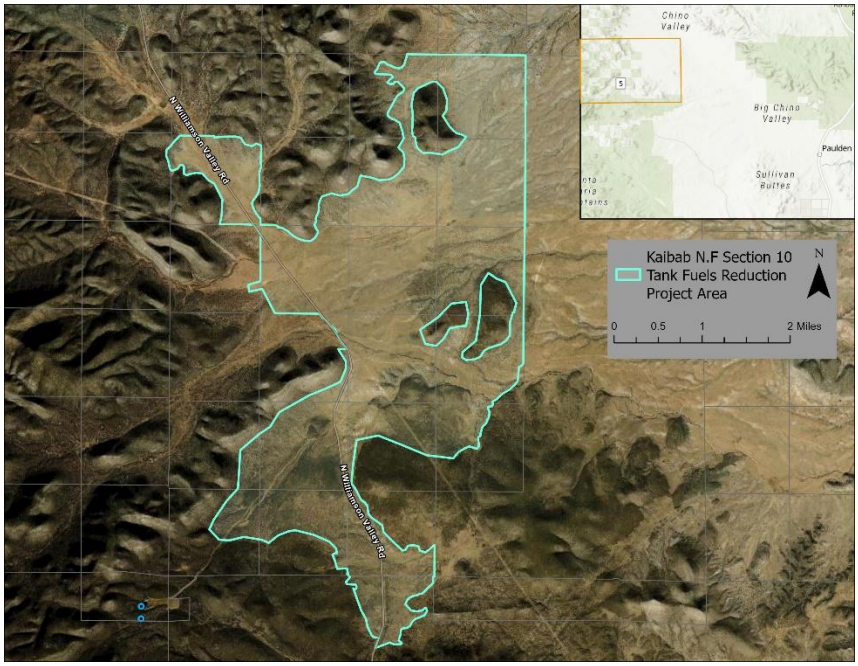

Figure 25 Aerial view of the Section 10 Tank Fuels Reduction Project.

Yavapai County Flood Control District

Yavapai County Flood Control District (YCFCD) is working with TNC to develop conceptual designs for flood mitigation and groundwater recharge basins along Big Chino Wash. Recharge on the Big Chino Wash is more cost beneficial than recharge on the Williamson Valley Wash. The channel at the railroad crossing would no longer be a concern, therefore bridge construction would not be necessary. However, the site is located far from the headwaters, therefore recharge construction costs are anticipated to cost over $25 million because of the removal of a large volume of material. The soil is near a less permeable clay unit, and has relatively shallow groundwater levels, less than 50’ deep. The proposed project boundaries would require an easement from a single landowner, rather than multiple landowners, which can simplify property acquisition.

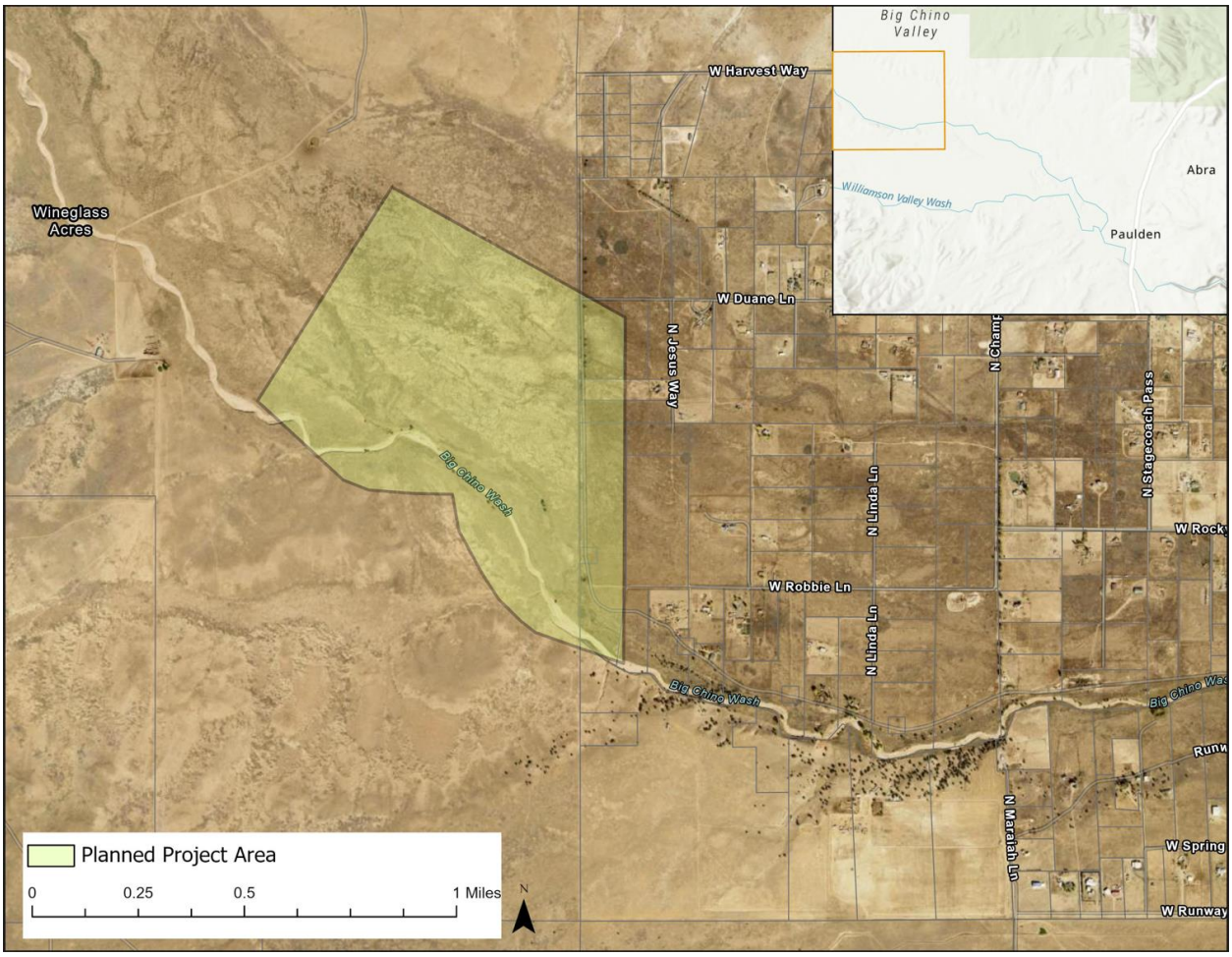

Figure 26 Rough area for conceptual planned recharge basins and corridor improvements along Big Chino Wash in Paulden

Prioritization Recommendations and Potential Funding

Grassland and watershed restoration projects generally have the highest impact and longevity when starting as high in the watershed as possible. However, majority of the most viable recharge areas i.e. the Big Chino Wash and Williamson Valley watersheds are primarily owned by private landowners. And over the next few years project implementation and improvements may occur with landowners who were involved in the stakeholder engagement process. The Bar Triangle Ranch in Williamson Valley Wash and the City of Prescott in the Big Chino Wash watersheds have engaged with TNC and NCDE to identify potential work on their lands, in order to restore watershed health and grassland condition. Priorities in these areas are to stop forward advancement of headcuts, reconnecting the incised channels to their floodplain to mitigate flood impacts during high flow, and vegetation management of juniper and exotics. Working with these two landowners is an opportunity to increase grassland productivity for grazing animals and wildlife by spreading flood flows and enhancing the opportunity for infiltration.

Headcut repairs, grade control, and plug and spread treatments should be priority projects with interested private landowners or supporting the Prescott National Forest in their planned restoration projects. These types of projects will prevent further degradation of the grassland and watershed and should be focused in Middle big Chino Wash, Lower Big Chino Wash, and Williamson Valley wash where native grassland health has been declining in vigor. Spreading water over these areas rather than leaving it trapped in incised channels without access to the floodplain will meet multiple landowner goals and is a novel solution to complement popular vegetation and fuel management projects. These projects will also reduce flooding impacts to private lands i.e. the Bar Triangle Ranch or Las Vegas Ranches which are inundated with flooding from Williamson Valley Wash. Watershed improvements should also be prioritized with the City of Prescott on their land purchased for the Big Chino Water ranch to raise the local groundwater table and enhance opportunities for groundwater recharge. sssssssssssssss

Supporting vegetation management projects including juniper removal, invasive species control, and fuel reduction ranked highly with all stakeholders in our outreach process and is an opportunity to add value to existing projects by coordinating to extend efforts from Federal and State Land to adjacent private lands. Existing work in the project area by public agencies (USFS, AZDFFM, AZDGFD) are primarily fuel reduction projects focusing on juniper removal and restoring natural fire regime through prescribed and managed fires. Efforts to expand these projects to collaborate with adjacent landowners is an opportunity to return the historic fire regime to the area which supported wide open grasslands with minimal woody encroachment. This landscape meets multiple goals of hazardous fuel reduction, increased forage productivity, and reduced groundwater use by juniper and woody vegetation relative to grasslands. Restoring the historic fire regime's frequency and intensity also helps to control exotic species.

Working across public jurisdictions and with private landowners has a spatial advantage of connecting treatments for landscape impact and collaboration is an effective mechanism to achieve shared goals of diverse stakeholders. Multi-party collaborations are also desirable from a grant funding perspective i.e. the America the Beautiful Challenge which provides multi-year up to multi-million dollar grants to support landscape conservation and restoration projects.

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Appendix A.

Private Landowners

Abra/Southwest Land and Cattle LLC.

The family that owns Abra Water Company also owns several parcels near Paulden and grazes cattle on adjacent parcels owned by Cemex (Figure 10). Flooding is a major issue for these landowners since they are near the bottom of the watershed. There are several defunct gravel pits and these landowners are are interested in developing flood control basins or juniper removal projects on their land. They are open to exploratory analyses, e.g. test pits to study infiltration if basins are to be designed. Gravel pits have been used for managed aquifer recharge but observations of ponded water during flood times indicates highly compacted soil and low infiltration rates. These areas overlay sand and gravel bedrock, the Big Chino aquifer. Geographically and geologically, this would be a high priority to investigate recharge potential through geotechnical survey. And the landowners were engaged in a one-on-one meeting with TNC and NCDE and expressed interest in further collaboration.

Figure 27 Parcels owned by Abra Water Co and parcels owned by Cemex which are used for grazing operations by Abra Water Co.

Yavapai Ranch

Land ownership includes 8,356 acres of land in a checkerboard pattern with U.S. Forest Service land interspersed. Yavapai Ranch's holdings are in the Juniper Mountains, north of Pine Creek and adjacent to the PNF (Prescott National Forest) Stringtown Wash-Pine Creek stream restoration work and the Section 10 Tank Fuels Reduction Project. Yavapai Ranch's cooperation is needed for the PNF Section 10 Tank Fuels Reduction project. Due to their checkerboard ownership adjacent to PNF land projects, Yavapai Ranch may be interested in extending additional forest restoration work by PNF onto their private

property. However, due to the interspersed nature of work on their land and the total area of their holdings, Yavapai Ranch may not have the highest need in the region. Their land holdings are within the watershed but outside of the aquifer area.

S Bar S Ranch

S Bar S has a 552-acre parcel of grassland in the northern area of Big Chino Wash, south of Railroad Canyon. They are operating center-pivot agriculture in the middle of Big Chino Wash and there is a fallowed center-pivot field to the southwest (Figure 28). They have relatively few junipers on their property but there are multiple areas of advancing headcuts due to berms, road drainage, or irrigation diversions.

Figure 28 Center-pivot fields on S Bar S land in Big Chino Wash.

K4 (Keickheffer) Ranch

K4 is one of the largest ranches in the Big Chino-Williamson Valley Watershed, covering 38,000 acres mostly in the grasslands above and around Big Chino Wash and Walnut Creek, as well as Williamson Valley Wash. Many parcels cover the foothills as well and juniper is widespread. Many headcuts and gullies.

Figure 29 Head cutting on K4 Ranch

JJJ Ranch

JJJ has ~22,000 acres in Turkey Flat and ~13,000 acres in Bear Mountain. Their land holdings are on the eastern edge of the watershed boundary and overlap with a very small part of the aquifer downstream of Muddy Wash. Drainages feed into the South and North Forks of Walnut Creek, as well as the upper reaches of Big Chino Wash. Juniper encroachment in grasslands is dense. Multiple headcuts are advancing from incised stock tank channels.

Figure 30 Head cutting and erosion around the stock tank and roads on JJJ Ranch.

Bar Triangle

Bar Triangle has 2,334 acres of grassland along both the east and west sides of the Williamson Valley Wash. These parcels contain rangelands as well as irrigated crops and border Arrow T Ranch and Casa de Las Vegas. Juniper is not a major concern as they have done extensive treatment but there are major headcuts in Williamson Valley Wash and in channels in the pastures where berms have been pushed up

to divert flows. Flooding of Williamson Valley Wash is a major concern for the landowner and has become more frequent in recent years. TNC and NCDE had a meeting with the landowner, and they are most interested in invasive species management and headcut repair on their land. They have reached out to NRCS for assistance and developed a plan, but the plan is waiting for NRCS approval. Their family has ranched this property for over 70 years, and they intend to place their land in a non-development conservation easement when it is passed to the next generation.

Figure 31 Williamson Valley Wash spreading flows through the valley due to high sediment supply and low slope.

Figure 32 Multiple advancing headcuts on the Bar Triangle property.

Campbell William Joseph

Campbell William Joseph's (Charney) property lies on 1700 acres between two parcels along Big Chino Wash near the confluence with Walnut Creek and Pine Creek. The two parcels are split by K4 Ranch. All three washes flow through the western parcel. Some juniper encroachment has occurred in the hills between Pine and Walnut Creek. There is one gully that has formed around a stock tank, but the main potential projects here would be the stabilization of Big Chino Wash and Walnut Creek. These work areas are shared between Charney's and K4's land and would require multi-party collaboration.

Figure 33 Gully forming below the stock tank

Figure 34 Areas where the channel has destabilized due to incision and the placement of berms

Chino Grande LLC

Chino Grande LLC has 34,600 acres along Big Chino Wash, north of the confluence with Walnut Creek and south of Seligman. Most of this land is grassland, but much of it is also in the foothills on either side of Big Chino Wash. Several areas have irrigated crops. Some stretches along the Big Chino Wash have extensive bank erosion and advancing headcuts.

Figure 35 Headcut emanating from road drainage on Chino Grande Ranch LLC's property.

Figure 36 Bank erosion on Chino Grande Ranch LLC's property

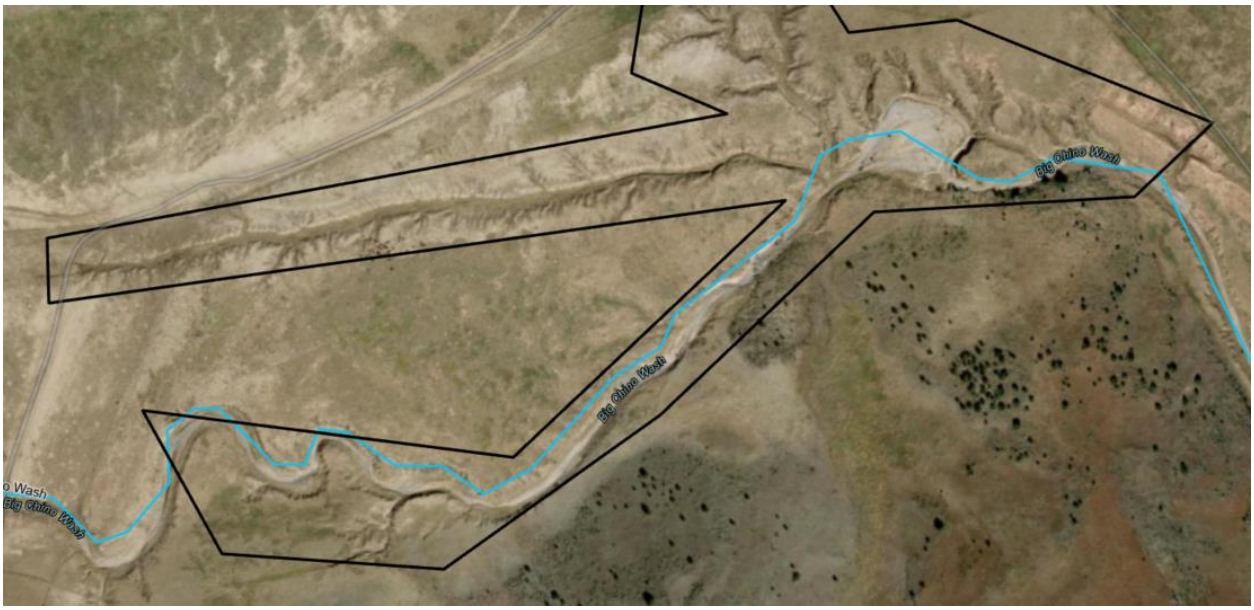

Figure 37 Extensive head cutting along Big Chino Wash on Chino Grande Ranch LLC's property

Figure 38 Head cutting above stock tank on Chino Grande LLC's property

Figure 39 Bank erosion and head cutting along Big Chino Wash on Chino Grande LLC's property

Appendix B.

Recommended Practices

Channel stabilization and erosion control practices will vary by the site's hydrology, geomorphology, and project goals. Small, incised channels, e.g., those leading to cattle tanks or downstream of road culverts may be repairable with hand-placed rock structures like one-rock dams and rock rundowns, respectively. Major channels including Big Chino Wash, Williamson Valley Wash, and Walnut Creek will require site surveys, designs, and larger engineered structures for channel stabilization, grade control, and meander inducing. These may include practices like bank armoring, rock sills, or j-hooks. Examples of these structures and their uses are shown below. This section and other mentions of potential projects are based on a high-level assessment and would require surveying, modeling, and design prior to implementation.

Bank Armor

Bank armoring should only be completed on banks that are at a stable grade for vegetation to establish and to reduce shear; banks should be no steeper than 3:1. Rocks are dug into the bank beginning with the largest rocks at the toe of the slope and working up. Large rocks at the toe of the slope can be substituted for logs of various sizes. If using logs, ensure that the logs are sufficiently wetted (in perennial or intermittent reaches). Large rocks or logs at the bottom of the slope armor the toe bank against undercutting erosion and should be used in stable meanders and straight sections of the channel. Otherwise, changes in shear stresses might focus flows on other unstable banks and could cause bank instability and channel incision.

Figure 40. Bank armoring. Left: bank armoring only was used to fill small sections of unstable banks in an otherwise stable channel. Right: bank instability on the cut bank was armored and one-rock dams (not seen) were installed above and below to promote channel stability while toe rock prevents further bank erosion. Note the use of logs in conjunction with rocks.

Rock Sills

Sills are used to stabilize channels and consist of a line of rocks buried at grade, perpendicular to the direction of flow across the entire width of the fan or bankfull channel (Figure 41). The purpose of a sill is to prevent incision from headcuts moving up through the channel. These structures are installed in

series along the channel with spacing determined by the channel slope. If logs are used interchangeably, it should be noted that log sills are not a permanent grade control and will rot out within 3-6 years.

Figure 41. A rock sill maintains the upstream channel gradient in a post-fire burn area. This rock sill remained intact following a 1000-year storm event on the upstream watershed.

Rock Vanes

The rock vane consists of a row of rocks buried in the bank and sloped upstream and down towards the bed of the stream (Figure 43). The vane serves to slow velocities along the outside of the bend and create a slow water habitat. The area just downstream of the vane should be excavated slightly at installation to initiate a small pool and the currents created by the vane should maintain the pool over time. Several vanes can be used in succession along the outside of meanders where stream velocities are highest.

Figure 42. Rock vanes and log vanes (left and right, respectively).

Bank Sloping

This practice utilizes machinery or hand crews to remove soil from eroding banks, reducing the slope to a more stable 4H:1V slope (Figure 44). When banks are too steep (> 2:1 slopes), vegetation struggles to establish or maintain, and erosion persists due to the steep slope. Bank material is pulled upslope and deposited away from the stream or if needed, used to fill the channel bottom in conjunction with instream structures. Within this project, this material can be used as a fill behind log weirs and rock sills to raise the base level of the incised channel and provide a medium for vegetation to become established. These banks will then be treated with a structural or bioengineering practice to provide further stabilization.

Figure 43. Bank sloping practices in various areas within Northern Arizona. Note the use of excavators for these photos; however, bank sloping practices can be scalable and completed by hand crews.

Zuni Bowl

Zuni bowls stabilize headcuts by spreading water's energy as it drops into the bowl (Figure 45). The top layer of the Zuni bowl should be tied into the grade and constructed so water will pour over the top layer, into the bowl, and continue flowing over the lower pour over. As water enters the bowl and slows down, it will drop fine sediments and provide stabilization for the area where it is installed. Zuni bowls should be built directly into existing headcuts (in combination with bank sloping to provide a stable ground surface) to arrest the headcut and allow the soil to fill in over time. Seeding under where the Zuni bowl will go can speed up vegetation establishment. Zuni bowls are most effective when paired with additional grade control like one-rock dams above and below the Zuni bowl.

Figure 44. Zuni bowls installed at headcuts with blue arrows indicating the direction of flow.

One-rock Dam (ORD)

This grade control and energy dissipation structure is constructed with a single layer of rock, across the bed of a channel. An example of a one-rock dam in a wet meadow a few years after construction is shown in Figure 45. These structures extend up the banks of the stream, at least to the bankfull elevation. ORDs are simple erosion control structures built with 8-24" diameter rocks (sized for a specific channel or watershed) for maintaining grade control, spreading surface water flow, retaining sediment, and preventing gullying/incision/headcuts. They are built as a single layer of rocks placed in a shallow trench. They are one rock high (hence the name) and as many rocks wide or as long as needed. ORDs should be constructed so that half of the rock is buried, and the tops are no more than a foot above the grade of the roadbed. When surface water flows down the roadbed gullies and erodes sediment, water will slow down as it hits the ORD and drop the sediment as water velocities and shear stress decrease. ORDs can reduce erosion while also aggrading and repairing rills and gullies over time. These can be constructed where gullies have formed in roadbeds, in eroded channels, in sub-channels, and in small incised streams. In deeper gullies, ORDs should be built periodically in a series moving uphill. Over time soil will aggrade and raise the gully bottom back up to the grade of the roadbed, mitigating incised channels and slowly reversing the impacts of erosion.

Figure 45 One-rock dam constructed in an incised meadow channel, aggrading and retaining water upstream. In the photo, water flows from top to bottom.

Rock Rundown

Like a Zuni bowl, rock rundowns help establish armoring, grade control, and stabilize steep gradients such as gulleys or headcuts (Figure 46). When used effectively, they are used to establish grade, decrease/dissipate water energy, reduce erosion from channel banks, and sometimes catch sediment/aggrade. They are constructed by smoothing the grade to a 2:1 slope and then armoring the ground with interlocking rocks. It is best practice to tie the sides of the structure into higher channel banks, ensure that the highest point is at or lower than the ground surface to ensure surface water flows do not bypass the structure, and to "tie in to" any existing solid features such as trees, slopes, or larger rocks at the bottom and top of the structure.

Figure 46 A rock rundown constructed with a brush mat underlay. NOTE: Surface water can flow into this structure because the middle of the structure is at/or below grade. Also, note how the sides of the structure follow the channel up the slope- failure to do this will enable surface water flows to bypass the structure.

Cross Vane Weirs

The rock cross vane weir provides both bank protection and grade control while promoting aquatic habitat in places with sustained flow. It consists of a row of rocks arranged in a U-shape with the bottom of the U on the upstream side at the channel bottom elevation with the arms extending downstream and up to bankfull elevation (Figure 47). A single row of rocks beginning approximately halfway down the weir arms and set perpendicular to the flow forms a step that is lower than the weir throat. All rocks used in the weir will have footer rocks on the downstream side to protect against undermining. The cross-vane weir arms serve to redirect flows and slow velocities along the outside of the bend, minimize bank erosion while centering flow in the channel, and protect the channel bed from upstream headcut migration.

Figure 47 Cross vane weir in an ephemeral channel (left) and in a perennial channel (right).

J-Hook Rock Vane

The J-hook rock vane provides both bank protection and grade control and is similar to a cross-vane weir with a single arm (Figure 48). It consists of a single row of rocks in a "J" shape with the curve on the upstream side at the channel bottom elevation with the arm extending downstream but sloping up to bankfull elevation on the outside of the meander. All rocks used in the vane will have footer rocks on the downstream side to protect against undermining. The vane serves to redirect flows and slow velocities along the outside of the bend and minimize bank erosion while protecting the channel bed from upstream headcut migration. The area just downstream of the vane should be excavated slightly at installation to initiate a small pool. Several J-hooks can be used in succession along the outside of meanders.

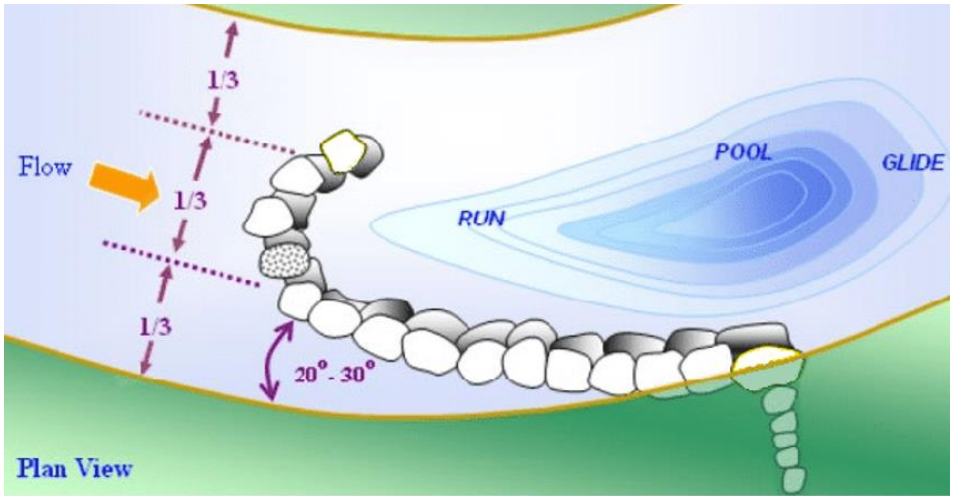

Figure 48 J-hook rock vane. Image from Part 654 Stream Restoration Design National Engineering Handbook (Rosgen, 2014).

Plug and Spread

The plug and spread structure is used in headcuts and incised channels to prevent headcut advancement and spread water over the valley. This structure is meant to reduce the water's shear stress by reducing the velocity with a plug and spreading the water as sheetflow over the valley. As the water's velocity is reduced, it will drop the suspended sediment in the channel and begin to aggrade the incised channel.

And then as water is spread over the valley, it will increase grass productivity by increasing infiltration and soil moisture, reducing erosion, and leaving a higher sediment supply in the channel rather than the valley. An example of a small gully where plug and spread was used is shown prior to construction in Figure 49. Examples of a successful plug and spread treatment in a semi-arid grassland are shown in Figure 50 after 3 months of recovery and 18 months of recovery. Notice how the channels have aggraded, how vegetation is regrowing in the channel, and how much wetter the valley slope is after the treatment.

Figure 49 Example of an incised gully through grassland, prior to plug and spread construction.

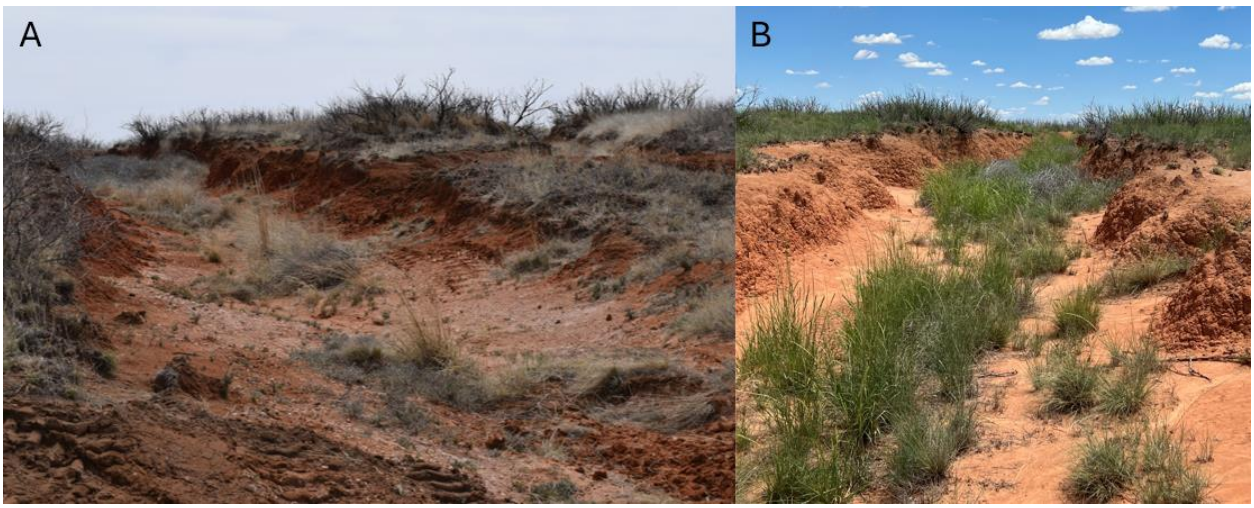

Figure 50 Recovered plug and spread treatment 3 months and 18 months after construction.

Big Chino Restoration and Partnership

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Selena Pao
Verde River Project Manager
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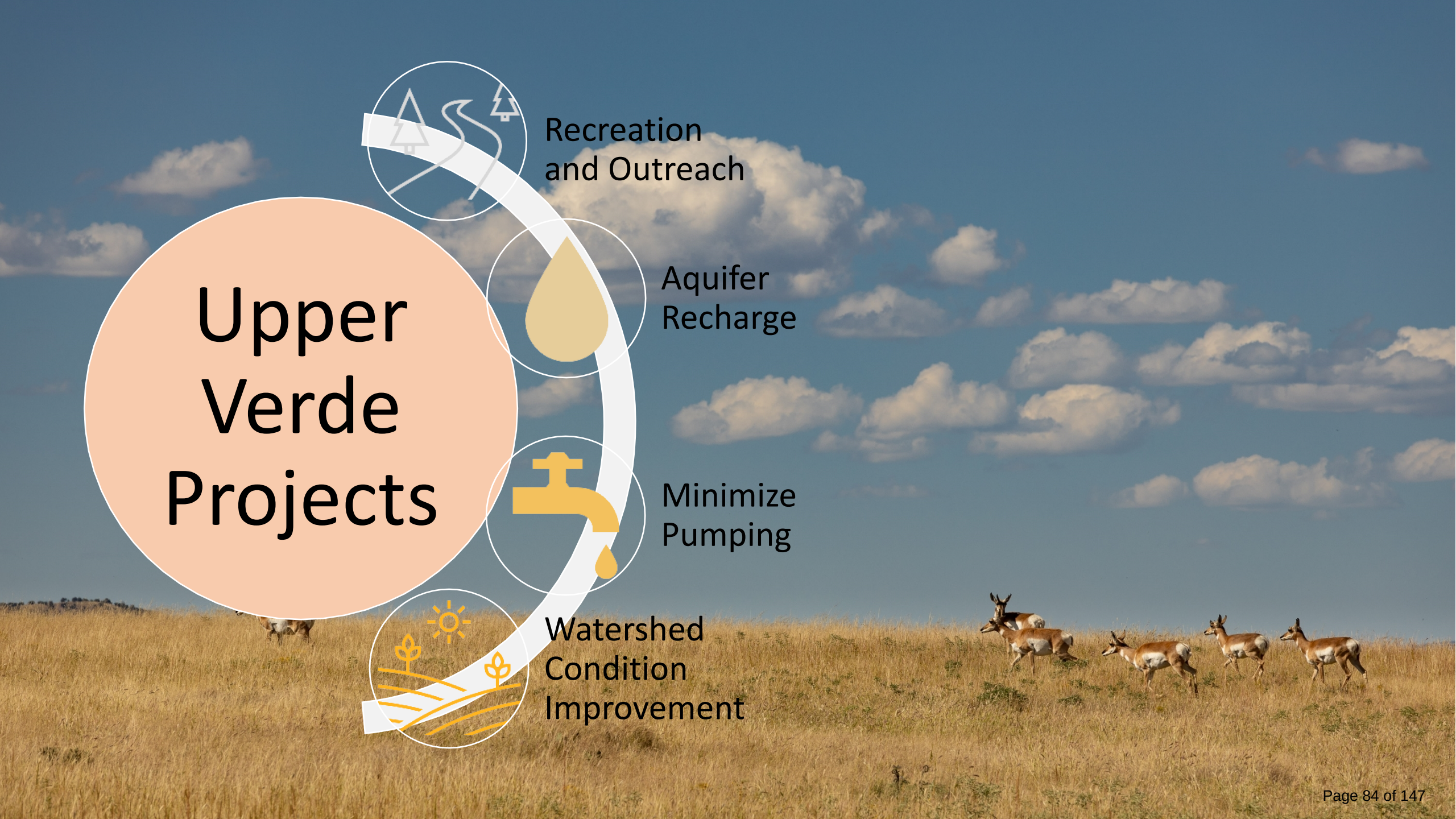
The Nature Conservancy is a global environmental nonprofit working to create a world where people and nature can thrive.

Founded in the U.S. through grassroots action in 1951, The Nature Conservancy has grown to become one of the most effective and wide-reaching environmental organizations in the world. Thanks to more than a million members and the dedicated efforts of our diverse staff and over 400 scientists, we impact conservation in 76 countries and territories: 37 by direct conservation impact and 39 through partners.

The Nature Conservancy

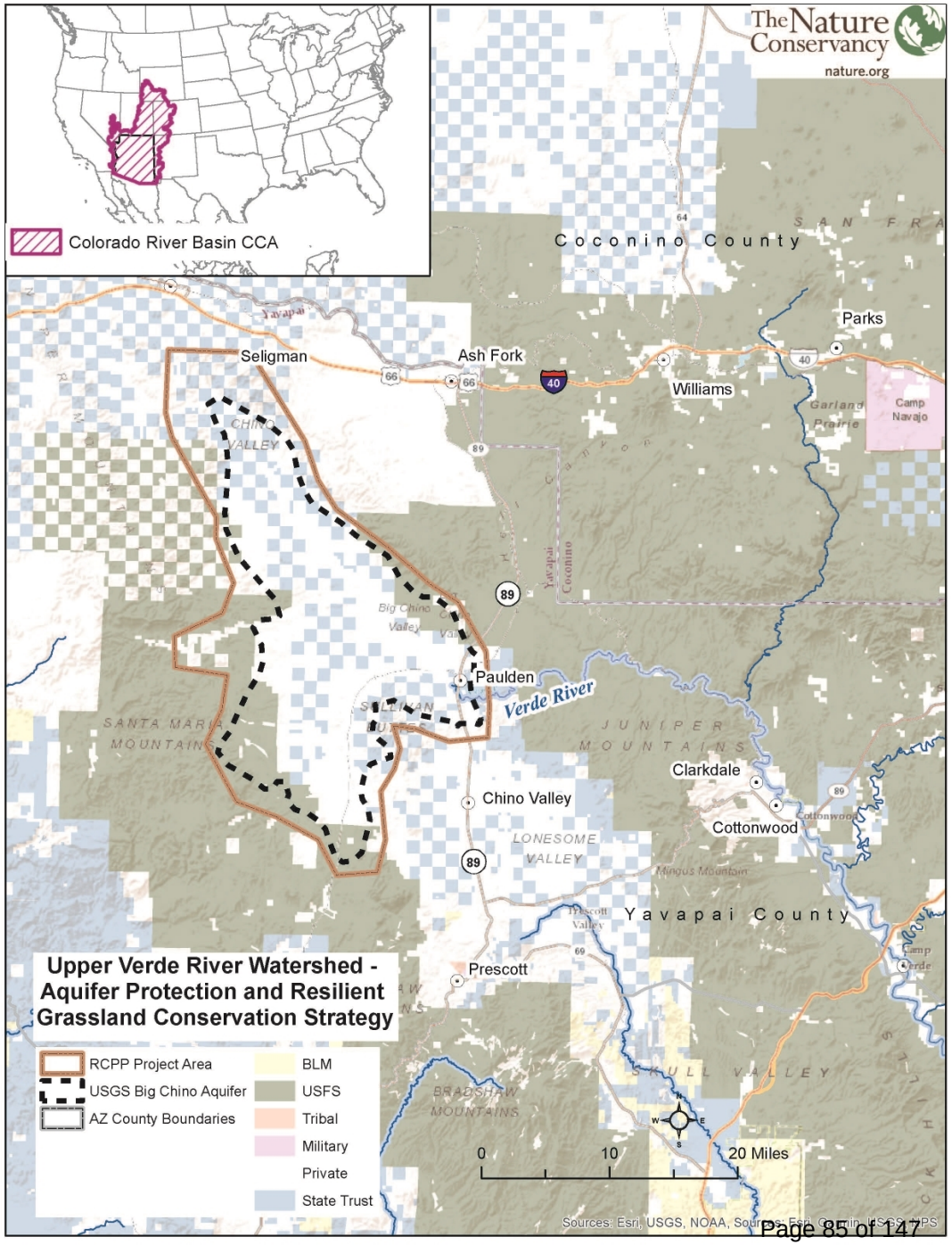
nature.org


Upper Verde Projects
Recreation and Outreach
Aquifer Recharge
Minimize Pumping
Watershed Condition Improvement

Upper Verde Regional Conservation Partnership Program

- Permanent protection of ranch and farmlands, resources for ranchers to improve ranch management
- Examples include Wells Ranch near headwaters and Hauser and Hauser Farms.
- NRCS RCPP $22 Million of federal and private funding
- Approx 15K to 20K acres

Please note: We are not asking the City to consider an easement however, we want to make sure that you are aware of this project and what we are doing broadly in this area.



Big Chino Assessment

- Contracted with Natural Channel Design to complete assessment.
- Stakeholder engagement to identify landscape restoration projects
  - Grassland restoration
  - Process based restoration
- Completed final draft of the Big Chino Assessment in September 2025


Flow
Flow
Flow
Flow
Headcuts continue advancing uphill through downcutting erosion


Basemap
Quick Measure
2km
1mi
Map Scale: 1:75,000
N
POWERED BY esri
Yavapai County GIS Department, Assessors Office, Parcel Maint…

Next Steps

- Partner with landowners to identify and develop specific restoration projects
- City of Prescott is a key landowner in the Big Chino
  - Complete a site assessment to identify projects that improve local water table to support grasses and reduce erosion

TO:	MAYOR AND CITY COUNCIL
AGENDA:	February 4 Subcommittee on Water Issues
DATE:	February 4, 2025
DEPT:	Public Works
ITEM #:	3.D
SUBJECT:	Presentation & Discussion Regarding Northern Arizona Municipal Water Users Association (NAMWUA).

ITEM SUMMARY

This item is to provide a presentation to the Subcommittee from the Public Works Division of Water Resources Management regarding NAMWUA and the City's participation in this organization.

BACKGROUND

NAMWUA's was formed to provide a collaborative effort between municipalities and water supplier within Norther Arizona to secure regional and local water resources for today and for the future. The organization currently includes seven Northern Arizona municipalities, including the City of Prescott, and one private water company. This presentation will provide an overview of membership in the organization, it's mission and objectives, current discussions, and an overview of the upcoming Water Utility Leadership Forum (WULF) which is hosted by NAMWUA bi-annually.

FINANCIAL IMPACT

None.

RECOMMENDED ACTION

This item is for discussion only. No formal action will be taken.

ATTACHMENTS

1. NAMWUA Presentation

NAMWUA Presentation

February 2025

Brought to you by:
BRIAN RUIZ
Water Resources & Environmental Services Manager

CITY OF PRESCOTT
ARIZONA

Presentation on the Northern Arizona Municipal Water Users Association

AGENDA

- Why NAMWUA
- Who is NAMWUA
- What does NAMWUA do
- WULF
- Questions

CITY OF PRESCOTT
ARIZONA

WHO IS NAMWUA?

Members

CITY OF PRESCOTT

City of Cottonwood
"Inspiring a Vibrant Community"

CHINO VALLEY
ARIZONA

Town of Clarkdale
ARIZONA

CITY OF SEDONA

CITY OF FLAGSTAFF
ESTABLISHED 1882
ARIZONA

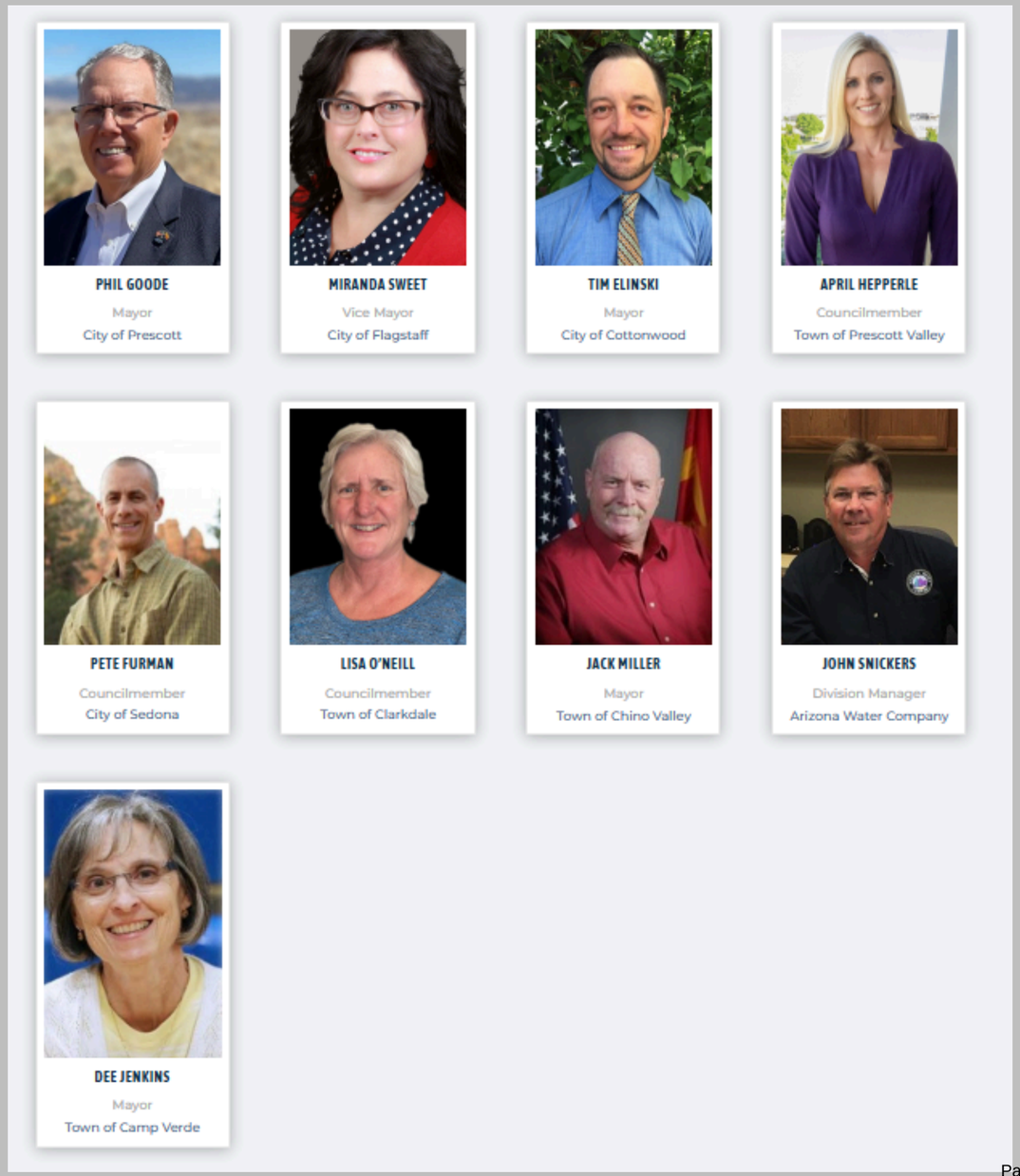
PRESCOTT VALLEY

ARIZONA WATER COMPANY

VisitCampVerde
THE CENTER OF IT ALL

WHO IS NAMWUA?

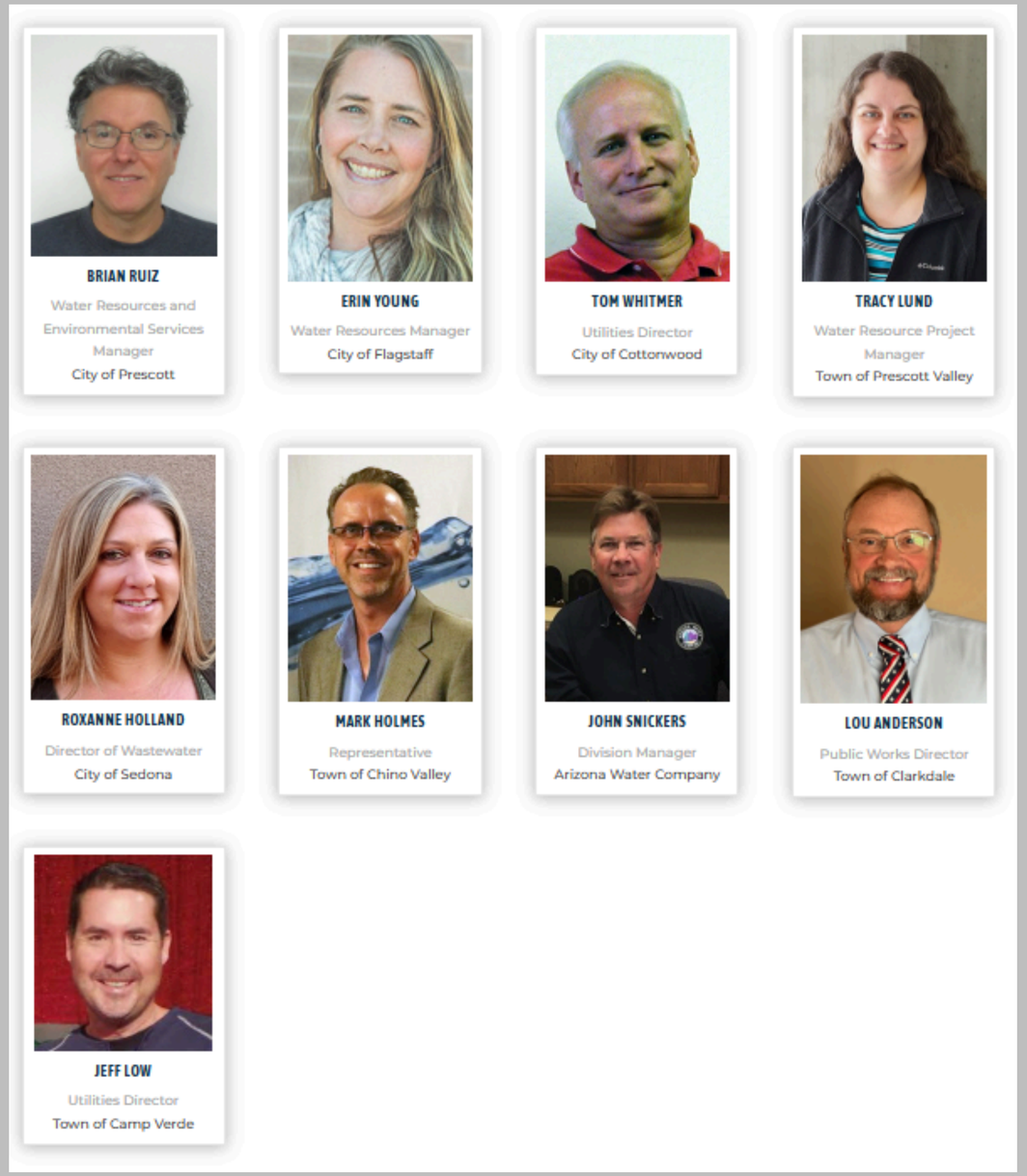
Board of Directors



CITY OF PRESCOTT ARIZONA

WHO IS NAMWUA?

Technical Advisory Committee (TAC)



CITY OF PRESCOTT ARIZONA

WHO IS NAMWUA?

Ron Doba
Executive Director

- NAMWUA
- Coconino Plateau Water Advisory Council
- Governor's Water Policy Council
- City of Flagstaff Water Commission

CITY OF PRESCOTT ARIZONA

WHY NAMWUA EXISTS

Mission

To unite our expertise and resources in a collaborative effort to secure regional and local water resources for today and the future.

Northern Arizona Municipal Water Users Association

Fair Water Distribution:

The “haves and the have nots”

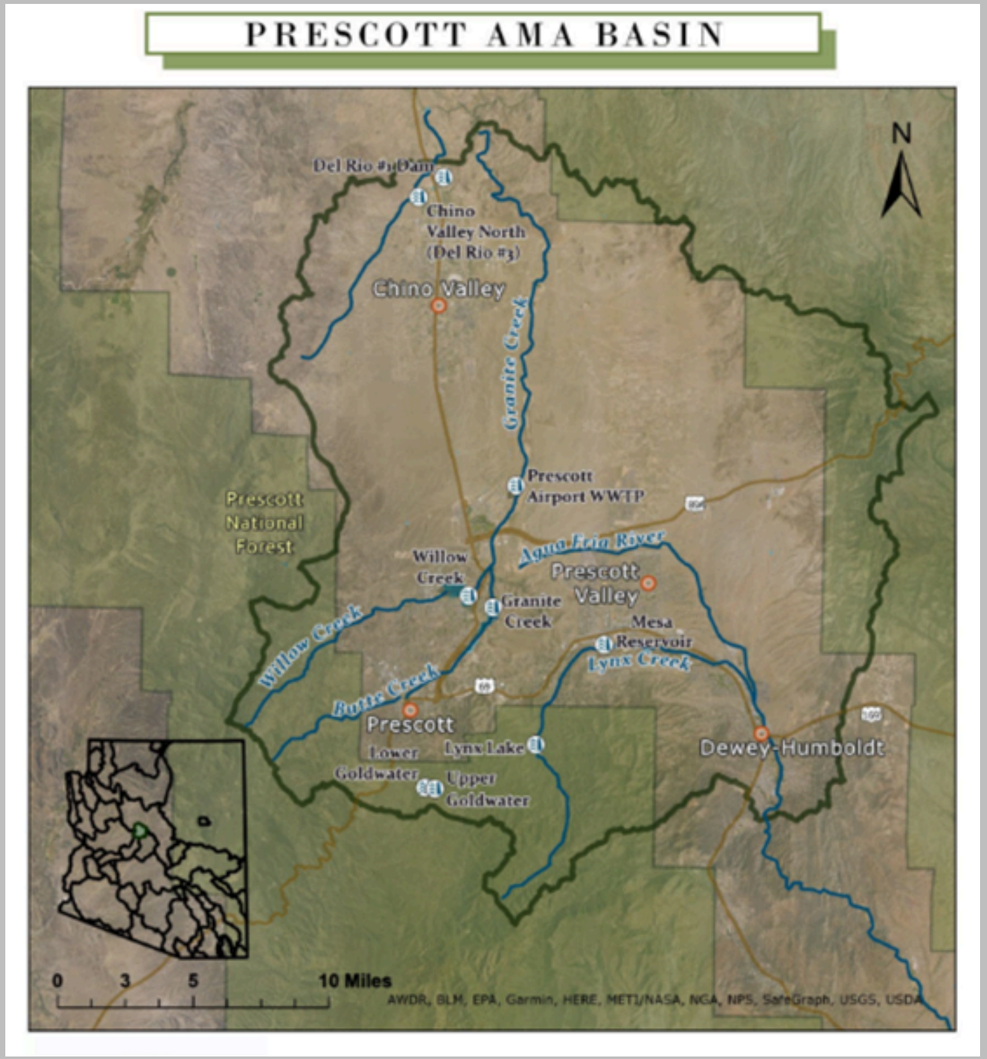
CITY OF PRESCOTT ARIZONA

CRWUA COLORADO RIVER WATER USERS ASSOCIATION

amwua ONE FOR WATER

WHAT NAMWUA DOES

Encourage resource planning that provides a sustainable water supply to meet projected growth



WHAT NAMWUA DOES

Provide valuable input to regulatory agencies and legislative bodies regarding proposed legislation and rulemaking

OUR BILL POSITIONS FOR 2024

On Arizona State Legislature Policy

Senate and House bills may be accessed at the following link: https://www.azleg.gov/bills/

HB 2006

Real estate; acting in concert

HB 2008

Commercial; industrial; conservation requirements; rules

HB 2009

Subdivisions; acting in concert

HB 2014

Wells; intention to drill; appropriation

CITY OF PRESCOTT

WHAT NAMWUA DOES

Maintain our position as a recognized authority and resource for water issues in Northern Arizona

CITY OF PRESCOTT ARIZONA

WHAT NAMWUA DOES

WATER UTILITY LEADERSHIP FORUM

Encourage and support communication and information sharing regarding water augmentation and management

CITY OF PRESCOTT ARIZONA

WULF

When

Bi-annually (May 23, 2025)

Where

High Country Conference Center, Flagstaff AZ

What

- Water Operators & Water Management Tracks
- Networking Events
- Professional Development Hours

START	END	OPERATORS TRACK	SPEAKER	WATER MANAGERS TRACK	SPEAKER
8:00AM	9:00AM	REGISTRATION, CHECK IN, BREAKFAST, NETWORKING			
9:00AM	9:15AM	WELCOME – CITY OF FLAGSTAFF MAYOR DAGGETT AND NAMWUA BOARD CHAIR, CITY OF PRESCOTT MAYOR PHIL GOODE			
9:15AM	10:00AM	Source Water Protection	David Buchard/Ryan Swapp, ADEQ	AZ Water Legislation – Strategies/Needs	Russell Smolden, B3 Strategies
10:00AM	10:45AM	Operator Ethics	Jason Bobko, ADEQ	Alternative Project Funding	Andrew Myers, Sustainability Partners
10:45AM	11:00AM	BREAK, SNACKS, NETWORKING			
11:00AM	11:45AM	Panel Discussion: The Future of Water for Northern Arizona Moderator: Susan Montgomery, Montgomery & Interpreter, PLC Panelist: Chairwoman Tanya Lewis, Yavapai-Apache Nation; Patrick Adams, Governor Katie Hobbs Office, Supervisor Travis Lingenfelter, Mohave County, Erin Young, City of Flagstaff			
12:00PM	1:00PM	LUNCH/KEYNOTE: PFAS Treatment Technology, Consumable Waste Disposal and Regulatory Compliance - Ernie Marks, EHS			
1:00PM	1:45PM	Innovative Stormwater Management for Reuse and Conservation – Alex Wood, Montgomery & Associates			
1:45PM	2:30PM	Specialized Tapping Services	Steve Helm, Tap Master, Inc.	AZ Water Blueprint Update	Sarah Porter, ASU Kyl Center for Water Policy
2:30PM	2:45PM	BREAK, SNACKS, NETWORKING			
2:45PM	3:30PM	PFS Rule Review	Matthew Olson/Austin Pannkuk, ADEQ	Water Reclamation/Projects	Taylor Pierce, PACE
3:30PM	4:15PM	APP Permits: Understanding a permit	TBD, ADEQ	Anatomy of a Rate Study	Dan Jackson, Willdan
4:15PM	5:00PM	Water Supply and Demand Studies	TBD, ADWR	Verde River Watershed Report Card	Kim Schonek, The Nature Conservancy

CITY OF PRESCOTT ARIZONA

WULF

SAVE THE DATE

SAVE THE DATE AND REGISTER!

Early Bird Registration is now open until March 31st on the NAMWUA web site at https://namwua.org/water-utilities-leadership-forum/ Register and earn up to 8 PDHs

Friday, May 23, 2025

High Country Conference Center
Flagstaff, Arizona

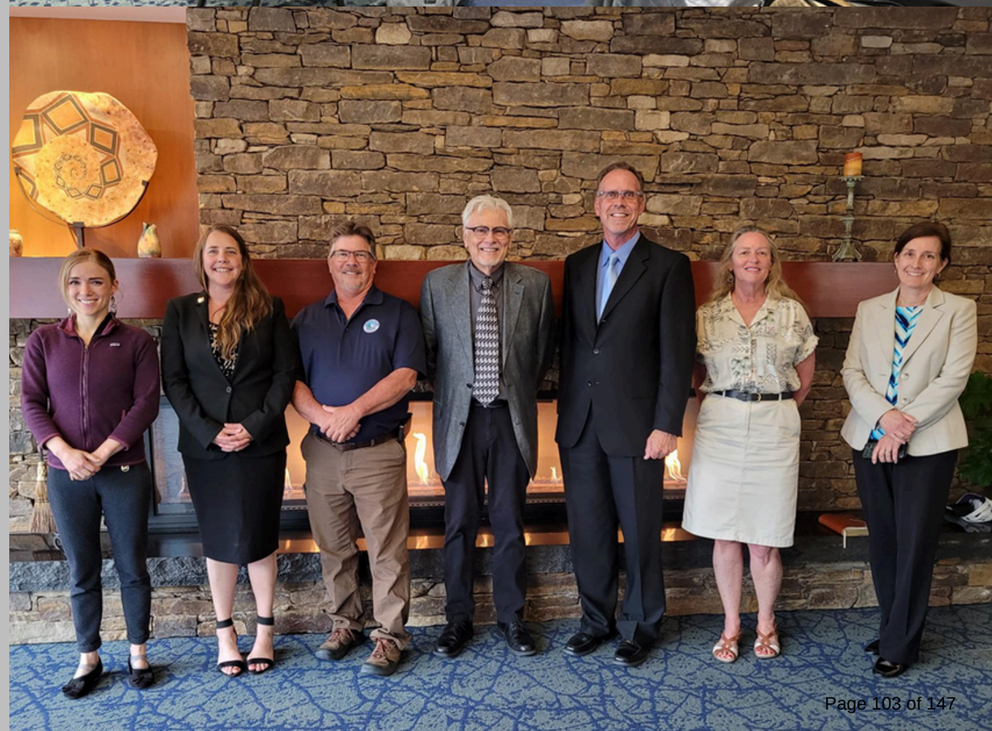
A limited number of rooms are available at reduced rates at the Drury Inn, Flagstaff until 4/5/2025. Refer to group number 10122779. Program available at https://namwua.org/water-utilities-leadership-forum/

A networking event will be on 5/22/2025 from 5-7PM at the 1899 Bar and Grill (across the street from the Drury Inn)

WULF

Northern Arizona Municipal Water Users Association

Water Utility Leadership Forum



QUESTIONS

TO:	MAYOR AND CITY COUNCIL
AGENDA:	February 4 Subcommittee on Water Issues
DATE:	February 4, 2025
DEPT:	Public Works
ITEM #:	3.E
SUBJECT:	Presentation & Discussion Regarding Water Service Applications and Potential Water Policy Updates.

ITEM SUMMARY

This item is for a general discussion regarding revisions to Water Service Applications (WSA) and the Water Policy to include information on hazardous materials and high water users.

BACKGROUND

Subcommittee on Water Resources (WIS) Chairperson Rusing has requested that a discussion be brought before the Subcommittee to evaluate the following items:

a. Amending WSA Application to include information about hazardous materials, filtering and discharge into the sewer system.
b. Amending Water Policy to include information about toxic/hazardous materials use, filtering and discharge.
c. Amend Water Policy to add a definition of what would be considered a high-water user.

Attachment 1 includes information regarding the City's Pretreatment Program which is designed in accordance to United States Environmental Protection Agency General Pretreatment Regulations. Attachment 1 includes excerpts from the document that discuss the Pretreatment Program Objectives, applicable treatment systems, program organization, program permitting requirements including the permit application and City Code 2-1-44, maximum levels which an industrial user can discharge into the City's treatment system. A full copy of the City Pretreatment Program can be provided upon request. Attachment 2 is the current WSA application for water request to the City. Attachment 3 provides information on recent code updates in Phoenix regarding high-water users. City staff are currently working on the Long-term Water Management Plan and will be evaluating alternatives and possible code revisions applicable to high-water users with the preparation of that document. Staff recommends that evaluation of new code and requirements for high-water users be conducted with the Long-term Water Management Plan and brought to WIS as a future discussion topic once alternatives are developed.

FINANCIAL IMPACT

None at this time.

RECOMMENDED ACTION

This item is for discussion only. No formal action will be taken.

ATTACHMENTS

1. Attachment 1_Prescott PT Program
2. Attachment 2_WSAapplication
3. Attachment 3_Phoenix High-Water Use Code

City of Prescott
Pretreatment Program

Chapter 1: Organization and Multi-Jurisdiction Implementation

July 2013

Contents

Appendices

Acronyms

AAC	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
APP	Aquifer Protection Permit
BNR	Biological Nutrient Removal
BOD_5	5-Day Biological Oxygen Demand
CFR	Code of Federal Regulations
City	City of Prescott
CIU	Categorical Industrial User
IU	Industrial User
MJA	Multi-jurisdictional Agreement
mgd	million gallons per day
POTW	Publicly Owned Treatment Works
SIU	Significant Industrial User
USEPA	United States Environmental Protection Agency
UV	Ultraviolet
WRF	Wastewater Reclamation Facility
WRP	Wastewater Reclamation Plant
WWTP	Wastewater Treatment Plant

1. Organization and Multi-Jurisdiction Implementation

1.1. Background

The City of Prescott (City) operates and maintains a collection system, comprised of more than 365 miles of sewer piping and 64 lift stations, that discharges collected wastewater to the Airport Wastewater Reclamation Facility (WRF), the Sundog Wastewater Treatment Plant (WWTP), and the Hassayampa Village Wastewater Reclamation Plant (WRP). The City serves approximately 17,500 sewer users of which nearly 2,200 are industrial, institutional, or commercial. Industrial and institutional users include manufacturing facilities (e.g., Pure Wafer [formerly Exsil, Inc.] and Sturm Ruger & Company, Inc.); major medical facilities (the Bob Stump Veterans Administration Medical Center and the Yavapai Regional Medical Center); colleges (Embry Riddle Aeronautical University, Prescott College, and Yavapai College), and the Yavapai County Criminal Justice and Detention Center. Commercial users include restaurants, laundries, auto shops, car washes, commercial cleaners, and many others.

1.2. Pretreatment Program Objectives

Like other publicly-owned treatment works (POTWs), the City's wastewater collection and wastewater treatment systems are vulnerable to discharges of toxic or harmful pollutants from users. The treatment facilities are designed to reduce the quantities of organic materials, solids, and nitrogen in the wastewater, making it suitable for reuse or recharge to the aquifer. They are not designed to receive or remove many other pollutants which pose the risk of *interference* or *pass-through*. Interference occurs in various degrees of severity. When pollutants enter the POTW in elevated concentrations, they may inhibit or disrupt the biological treatment processes or facility operations. The results range from increased treatment costs to diminished effluent or biosolids quality. This may render the effluent unacceptable for reuse/recharge and could result in effluent quality permit violations. Likewise, low quality biosolids may not meet disposal criteria, drastically increasing disposal costs. Pass-through occurs when a pollutant exits the POTW in concentrations that exceed permit limitations or fail to meet effluent quality criteria.

In 1978, the United States Environmental Protection Agency (USEPA) promulgated the General Pretreatment Regulations, Title 40 Code of Federal Regulations (CFR) Part 403 (40 CFR 403), which defines the National Pretreatment Program. The Arizona

Administrative Code (AAC), Title 18 Article 9 Part 905(A)(8)(b) (R18-9-A905(A)(8)(b)) incorporates the general pretreatment regulations for existing and new sources of pollution contained in 40 CFR 403 and Appendices A, D, E, and G. The discharge of toxic or harmful pollutants can be effectively controlled through a local pretreatment program that is based on these regulations, structured to address specific local concerns, and enforced through a robust Sewer Use Ordinance.

The objectives of the City's Pretreatment Program are to: 1) facilitate the control of pollutant discharges into the collection system, 2) resolve collection system blockage and capacity reduction issues, 3) protect the treatment facilities from upset, 4) maintain high effluent and biosolids quality, and 5) protect city workers, the environment, and all citizens while promoting good relationships with users. The City's legal authority to implement the pretreatment program is established in Title II, Chapter 2-1 of the City Code.

1.3. Treatment System Descriptions

The following sections provide brief descriptions of the three wastewater treatment facilities that serve the City's service area and the regulatory criteria that govern them.

1.3.1. Airport WRF

The Airport WRF is permitted to treat up to 2.2 million gallons per day (mgd) and has treated approximately 1.04 mgd of wastewater on an annual average basis (2011 - 2012) from residential, commercial, and industrial sectors within the City. It is owned and operated by the City and is located at 2800 Melville Road. This facility consists of preliminary treatment (grit removal, bar screen, flow monitoring) and continues through biological nutrient removal (BNR) treatment (oxidation ditches, with anoxic basins for nitrogen removal), secondary clarification, sand filtration, and chlorine disinfection. Waste activated sludge is conditioned with polymer, dewatered by centrifuge, and hauled to landfill for disposal.

The Airport WRF produces Class B+ reclaimed water that is reused for golf course turf irrigation and/or sent to recharge basins. The Airport WRF operates under the Arizona Department of Environmental Quality (ADEQ) Aquifer Protection Permit (APP) P-101733, which was last modified on January 10, 2012. This permit is valid for the life of the facility provided that the facility is operated in accordance with the APP and does not violate effluent discharge limitations.

1.3.2. Sundog WWTP

The Sundog WWTP is permitted to treat up to 6 mgd and has treated approximately 2.07 mgd of wastewater on an annual average basis (2011-2012) from residential, commercial, and industrial sectors within the City. It is owned and operated by the City and is located at 1500 Sundog Ranch Road. This facility consists of preliminary treatment, primary clarification, BNR treatment (oxidation ditches designed for single-stage five-day biochemical oxygen demand [BOD_5] and nitrogen removal), secondary clarification, sand filtration, and UV disinfection supplemented with chlorine disinfection. Solids are processed by anaerobic sludge digestion, polymer conditioning, and belt press dewatering. Digested and dewatered biosolids are hauled offsite and land-applied or landfilled in accordance with state and federal regulations.

Sundog WWTP produces Class B+ reclaimed water that is transported via gravity flow to the Airport WRF recharge basins or reused for golf course turf irrigation, and construction purposes.

The Sundog WWTP operates under ADEQ APP P-100353, which was last modified on August 28, 2002. This permit is valid for the life of the facility provided that the facility is operated in accordance with the APP and does not violate effluent discharge limitations.

1.3.3. Hassayampa Village WRP

The Hassayampa Village WRP is permitted to treat up to 0.75 mgd and has treated approximately 0.2 mgd of wastewater on an annual average basis (2011-2012) from residential and commercial sectors of the City. It is owned by the City and operated by the Hassayampa Club Partners, LLLP. The Hassayampa Village WRP is located at 1990 Golf Club Lane. This facility is a scalping plant located within the Sundog WWTP receiving area. Flow is diverted from the Sundog WWTP collection system, treated to reuse standards and used for golf course irrigation. Influent flows to the Hassayampa Village WRP are adjusted to meet irrigation needs. The WRP consists of equalization, screening, activated sludge, sand filtration, and UV disinfection.

The Hassayampa Village WRP produces Class B+ reclaimed water that is reused for turf irrigation by the golf course. The Hassayampa WRP does not have sludge or biosolids handling facilities; excess sludge from the activated sludge system and any unused effluent is returned to the Sundog WWTP collection system.

The Hassayampa Village WRP operates under ADEQ APP P-103159, which was last modified on September 26, 2005. This permit is valid for the life of the facility provided

that the facility is operated in accordance with the APP and does not violate effluent discharge limitations.

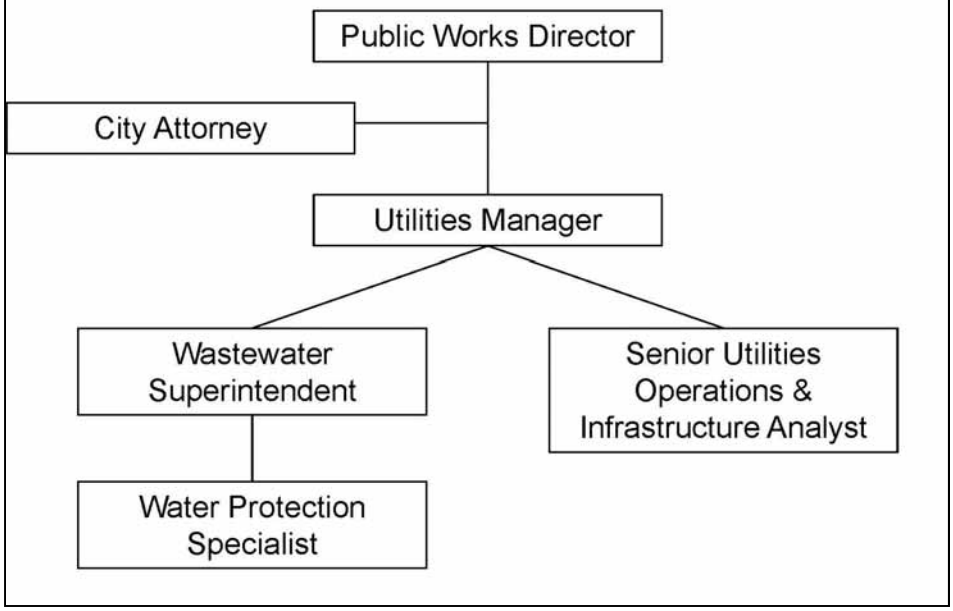
1.4. Future Expansion Plans

As part of the City's Wastewater Facilities Master Plan, hydraulic and treatment capacities for both the Airport WRF and Sundog WWTP were evaluated.

1.5. Pretreatment Program Organization

In accordance with 40 CFR 403.8(f)(5) and the City Code, the City Public Works Department is authorized to regulate and enforce Industrial User (IU) compliance with wastewater discharges to the collection system and treatment facilities. Figure 1 presents the organization chart for the Public Works Department involved with the Pretreatment Program.

Figure 1
Organizational Chart for City of Prescott Pretreatment Staff



The Water Protection Specialist is responsible for acting as the Compliance Inspector and conducting or overseeing compliance monitoring and facility inspections.

1.6. Contributing Jurisdictions

A portion of the City's wastewater collection system is located on the Yavapai Prescott Indian Reservation (Reservation), and receives waste streams from users not located within city limits. Five neighboring agencies: Iron Springs Sanitary District, Creekside Sanitary District, Calvary Chapel Wastewater Improvement District, High Valley Ranch Improvement District, and Granite Gardens Sanitary District also discharge to the City's wastewater collection system.

Currently the City does not have multi-jurisdictional agreements (MJAs) established with the Yavapai Prescott Indian Tribe or the neighboring sanitary and sewer improvement districts. An existing agreement between the Tribe and the City states that "All Reservation discharges to the City sewer system shall conform to the pretreatment standards applicable to similar non-Reservation discharges into the City sewer system." While there are no identified Significant Industrial Users (SIUs) discharging from the Reservation, the City will continue to pursue a MJA on grounds of the existing agreement in order to have the legal authority to regulate reservation/tribal discharges.

The sewer customers in the neighboring sanitary and sewer improvement districts are almost exclusively residential, with only a few commercial users. The City will continue to evaluate land use within the contributing sanitary sewer districts for potential industrial users. Based on the current dischargers, establishing MJAs with the neighboring sanitary sewer districts is not an initial focus of the City's Pretreatment Program.

A MJA defines the contributing jurisdiction's responsibilities and identifies the City as having the primary responsibility for enforcing pretreatment standards and requirements for IUs located within the contributing jurisdiction. At a minimum, the contributing jurisdiction will adopt a pretreatment sewer ordinance and local limits for industrial discharges that are at least as stringent as the City's. The MJA will also detail requirements concerning transfer of records and right of entry for inspection and monitoring. A MJA would require approval from the City before the contributing jurisdictions would be able to add industrial connections to the collection system. An example MJA is presented in Appendix A.

City of Prescott

Pretreatment Program

Chapter 5: Industrial Wastewater Discharge Permits

July 2013

Contents

Tables

Appendices

Acronyms

BMPs	Best Management Practices
CFR	Code of Federal Regulations
City	City of Prescott
gpd	gallons per day
IWDP	Industrial Wastewater Discharge Permit
IWS	Industrial Waste Survey
NSCIU	Non-Significant Categorical Industrial
POTW	Publicly Owned Treatment Works
SIC	Standard Industrial Classification
SIUs	Significant Industrial Users

5. Industrial Wastewater Discharge Permits

5.1. Background

The General Pretreatment Regulations, 40 Code of Federal Regulations (CFR) Part 403, require the City of Prescott (City) to control wastewater discharges from significant industrial users (SIUs) through permits or similar means to ensure compliance with pretreatment standards and requirements. The regulations also specify that individual control mechanisms, in the form of Industrial Wastewater Discharge Permits (IWDP), be issued to SIUs and be enforceable by the City. The IWDP must contain, at a minimum, the following elements specified in 40 CRF 403.8 (f)(1)(iii)(A - E):

- Statement of duration (in no case more than five years)
- Statement of non-transferability without prior notification to the Public Works Director and provisions for transferring IWDP conditions to a new owner or operator
- Wastewater discharge limits based on applicable general pretreatment standards, categorical pretreatment standards, and local limits
- Self-monitoring, sampling, reporting, notification, and recordkeeping requirements
- Statement of applicable civil and criminal penalties for violation of pretreatment standards and compliance schedules

This chapter describes the procedures for permitting SIUs and includes templates for the IWDP application (Appendix A) and permit contents (Appendix B).

5.2. Permitting Requirements

The City's legal authority to issue IWDP is described in City Code, Title II, Chapter 2-1-65. Each SIU is responsible for obtaining an IWDP from the City's Public Works Director prior to discharging wastewater to the Publicly Owned Treatment Works (POTWs). An SIU, as defined by 40 CFR 403.3, is an industrial user which falls into one or more of the following categories:

- Subject to categorical pretreatment standards, found in 40 CFR 405 through 471

- Discharges an average of 25,000 gallons per day (gpd) or more of process wastewater
- Discharges process waste stream which makes up five percent or more of the average dry weather hydraulic or organic capacity of the POTW
- Designated as such by the Public Works Director on the basis that it has a reasonable potential to adversely affect the POTW's operations or violate any pretreatment standard or requirement

The Public Works Director may determine that an industrial user subject to categorical pretreatment standards is a non-significant categorical industrial user (NSCIU), rather than an SIU, if the industrial user discharges less than 100 gpd of total categorical wastewater and has consistently complied with the categorical pretreatment standards and does not discharge untreated process wastewater. For an industrial user that meets the SIU criteria, but has no reasonable potential for adversely affecting POTW operations, the Public Works Director may determine that the industrial user should not be considered an SIU (City Code, Title II, Chapter 2-1-9). The Public Works Director may also require an SIU to obtain an IWDP even if discharge of wastewater is not anticipated (e.g., zero dischargers).

Any violation of the IWDP will be considered a violation of City Code, Title II, Chapter 2-1 and will be subject to enforcement actions. Obtaining an IWDP does not relieve a Permittee of its obligation to comply with all federal, state, and local pretreatment standards.

5.3 Permit Application

An application for an IWDP must be filed at least 45 calendar days prior to the date of beginning to discharger wastewater. An example of the IWDP application is included in Appendix A. Permits are issued for a specified time period, not to exceed five years from the effective date of the permit. A permit may be issued for a period of less than five years at the discretion of the Public Works Director. Each IWDP will indicate the specific date of expiration.

An industrial user with an expiring IWDP must apply for reissuance by submitting a complete permit application at least 45 calendar days prior to the IWDP expiration date.

5.4 Permit Contents

The IWDP will include such conditions as are deemed reasonably necessary by the Public Works Director to prevent pass-through or interference, protect the quality of the POTW effluent, facilitate sludge management and disposal, protect against damage to the collection system and POTW, prevent sanitary sewer overflows, and protect worker

health and safety. Information contained in the permit may include, but is not limited to, the following:

- General facility information, including name, address, and contact information for the owner/operator
- Number of employees and hours of operations
- Standard Industrial Classification (SIC) code
- Description of the operations, including nature, average production rate, and schematic process diagram
- Description of the contributing wastewater streams that comprise each identified non-domestic discharge into the sewers
- List of raw materials and chemicals used or stored at facility
- Site map indicating the locations of all compliance sampling points, sewer connections, sewer laterals, and floor drains
- Pretreatment processes and equipment
- Time, volume, and duration of discharges (e.g., batch or continuous)
- Wastewater discharge limits based on applicable pretreatment standards and/or requirements for Best Management Practices (BMPs)
- Rationale for the wastewater discharge limits
- Flow measurement procedures and limits on average and/or maximum discharge flow rates
- Applicable federal categorical pretreatment standards (adjusted if necessary to account for dilution), supporting production data (if necessary), and the compliance sampling point where the standards apply
- Self-monitoring requirements, sampling, and reporting limits, including a list of pollutants to be monitored, sampling location(s), sampling frequency, and sample type
- Reporting, notification, and recordkeeping requirements
- Permit expiration date (not to exceed five years in duration)

- A statement that the permit is non-transferable without prior notification to and approval by the Public Works Director
- A statement of applicable civil and criminal penalties for violation of pretreatment requirements or compliance schedule
- Requirements for the installation of pretreatment technology, pollution control, or construction of appropriate containment devices, designed to reduce, eliminate, or prevent the discharge of pollutants into the POTW
- Requirements for development and implementation of spill control plans and other special conditions, including management practices necessary to adequately prevent accidental, unanticipated, or non-routine discharges
- Development and implementation of waste minimization plans, including but not limited to BMPs, to reduce the amount of pollutants discharged to the collection system and POTW
- Requirements for installation and maintenance of inspection and sampling facilities and equipment, including flow measurement devices
- A statement that compliance with the permit does not relieve the Permittee of responsibility for compliance with all applicable federal and state pretreatment standards, including those which become effective during the term of the permit
- Other special conditions as deemed appropriate by the Public Works Director to ensure compliance with the City Code, and federal and state laws, rules, and regulations

The IWDP application will be signed by an authorized representative of the industrial user, per City Code, Title II, Chapter 2-1-9, and contain the following certification statement:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

5.5 Permit Decisions

The Public Works Director will evaluate the data provided by the SIU in the IWDP application and may require additional information. The Public Works Director will provide written notice to the IWDP applicant within 60 calendar days of receipt of the application of the decision to issue or deny the permit and the terms of the permit, if a permit is issued, and will provide public notice of the issuance of an IWDP.

Any person, including the industrial user, may petition the Public Works Director to reconsider a permit decision within 20 calendar days after public notice of the permit issuance. If the Public Works Director does not provide feedback of the decision within 30 calendar days, the request for reconsideration will be deemed to be denied. Decisions to not to issue, or not to modify a permit, will be considered final administrative actions for the purposes of judicial review.

5.6 Permit Modifications

Pursuant to City Code, Title II, Chapter 2-1-66-4, the Public Works Director may modify an IWDP for good cause, including, but not limited to the following reasons:

- To incorporate new or revised federal, state, or local pretreatment standards
- To address significant alterations or additions to the industrial user's operation, processes, or wastewater volume or characteristics
- A change occurs in the POTW that requires either a temporary or permanent reduction or elimination of permitted discharge
- Information is obtained indicating that permitted discharge poses a threat the City's POTW, personnel, or effluent
- A violation of any terms or conditions of the IWDP occurs
- Misrepresentations or failure to fully disclose all relevant facts in the IWDP application or in any required reporting
- Revision of, or a grant of variance, from categorical pretreatment standards pursuant to 40 CFR 403.13
- To correct typographical or other errors in the IWDP
- To reflect transfer of the facility ownership or operation to a new owner or operator

A permitted user shall notify the Public Works Director at least 60 calendar days in advance of a change in ownership or operation to request a transfer of the IWDP to the new owner/operator. Failure to request in advance will render the IWDP void as of the date of the transfer of ownership/operations.

The Public Works Director may also revoke an IWDP for the following reasons:

- Failure to notify the Public Works Director of significant changes in discharge volume or wastewater characteristics prior to discharge
- Failure to provide prior notification to the Public Works Director of changed conditions, per City Code, Title II, Chapter 2-1-67-5
- Misrepresentation of information or failure to fully disclose all relevant facts in the IWDP application
- Falsification of any documents, including self-monitoring reports and certification statements
- Tampering with monitoring equipment with intent to falsify monitoring results or impact the outcome of sampling
- Refusing to allow City staff timely access to the facility premises or records
- Failure to meet wastewater discharge limits
- Failure to pay fees or fines in a timely manner (i.e., after 30 calendar days)
- Failure to meet compliance schedules
- Failure to complete the Industrial Waste Survey (IWS) or the IWDP application
- Failure to provide advance notice of transfer of business ownership or operation of a permitted facility and request a transfer of IWDP
- Violation of any pretreatment standards or any terms of the IWDP

The IWDP shall be voidable upon ceasing operations or transfer of business ownership. Issuance of an IWDP shall void all previous wastewater discharge permits for that facility.

Table 1 Permitting Timetable	
Element	**Schedule**
Permit Application	
New Connections	File IWDP application 45 calendar days before discharging wastewater
Existing Connections	File IWDP application within 45 calendar days after June 27, 2013 (Ordinance adoption by City Council); do not continue to discharging wastewater 30 day after Ordinance adoption unless have obtained IWDP or have been granted extension from Public Works Director
Permit Issuance/Transfer	
Notice to Issue	Within 60 calendar days after receiving completed IWDP application, Public Works Director will send written notice to applicant regarding decision to issue permit
Reconsider Permit Terms	Within 20 calendar days after publication of notice of final permit issuance, anyone can petition Public Works Director to reconsider terms and conditions of the IWDP
	Within 30 calendar of receiving request to reconsider permit, if the Public Works Director does not respond, the request to reconsider the permit terms and conditions will be deemed to be denied
Permit Expiration	Permitted industrial user must submit completed application within 45 calendar days of the permit expiration date
Transfer to New Owner/Operator	Permitted industrial user must notify Public Works Director at least 60 calendar days in advance of the transfer

Notes: IWDP = Industrial Wastewater Discharge Permit

Appendix A

Industrial Wastewater Discharge Permit Application Template

City Use Only
___Permit Not Required
___SIU
___Zero Discharger
___High Strength
___Pollution Prevention
___Other
This Permit is for:
___ New Permit
___ Existing Permit

City of Prescott
Public Works Department
Industrial Wastewater Discharge Permit Application

Note: In accordance with 40 CRF 403.14 and City Code, Title II, Chapter 2-1-69, information and data provided in this permit application which identifies wastewater constituents and characteristics shall be available to the public without restriction. Requests for confidential treatment of other information shall be governed by procedures specified in 40 CRF Part 2.

The following application should be submitted to the Public Works Department at least 30 days prior to the anticipated wastewater discharge.

SECTION A. GENERAL INFORMATION

1. BUSINESS INFORMATION

Business Name:	
Mailing Address:	
Facility Address:	
Facility Contact/Title:	
Contact Telephone No.	
Contact E-mail:	
Signatory Authority*/Title:	
Signatory Authority Telephone No:	
Signatory Authority E-Mail:	
Building Owner: (if applicable)	
Building Owner Mailing Address:	
Building Owner Contact Telephone No.	
Building Owner Contact E-mail:	

* Signatory Authority is the authorized representative of industrial discharger per City Code, Title II, Chapter 2-1-9.

2. OPERATING INFORMATION

Type of Industry:							
Description of Operations:							
List chemicals and metals used in the process (raw materials):							
SIC Code(s):							
Days of Operation (circle):	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Hours of Operation:							
Number of shifts per day:							
Total number of employees per shift:							
Is operation continuous throughout the year?							
Is operation seasonal? (circle corresponding months of active production)	Jan	Feb	Mar	Apr	May	Jun	
	Jul	Aug	Sep	Oct	Nov	Dec	

SECTION B. OPERATIONAL PROCESSES

1. WATER USAGE

Is water used in operation processes? (circle)	YES NO	
Describe processes that use water:		
Water Source (circle):	City Supply	Private Well
Describe treatment processes used for incoming water (if applicable):		
List water consumption in plant process[1]:		
Non-contact cooling water:		gallons per day
Boiler Feed / Manufacturing Process / Business Operations		gallons per day

1. WATER USAGE (cont.)

Personnel Sanitary Use		gallons per day
Contained in Product		gallons per day
Landscaping / Other		gallons per day
TOTAL:		gallons per day

[1] Provide daily average based on 12 months of water billing records, for new facility provide best engineering estimate

2. WASTEWATER DISCHARGED

Type of discharge (circle):	Batch (Intermittent)	Continuous (Steady)
List average volume of wastewater discharged[1]:		
City sanitary sewer		gallons per day
City storm sewer		gallons per day
Waste hauler		gallons per day
Does the facility have flow metering equipment?	YES	NO
If yes, what type of equipment:		
Are there any planned expansions or changes in the immediate future that could alter wastewater discharge volumes or characteristics?	YES	NO
If yes, please describe:		

[1] For new facility provide best engineering estimate

3. STORM SEWERS AND WELLS

Are any of the following located on the property? (CIRCLE)		
Storm sewers	YES	NO
Private wells	YES	NO
Dry wells	YES	NO
Abandoned water wells	YES	NO

Provide two schematic drawings (on separate sheets) that include the following information:

SCHEMATIC #1:

1) Wastewater flows and types

SCHEMATIC #2:

1) Location of wastewater treatment systems and devices including interceptors, traps (grease, sand/oil, grit, or other), ion exchange, filtration, neutralization systems, or any other wastewater treatment device in use
2) sampling locations
3) connection(s) to sanitary sewer
4) floor drains
5) chemical storage area(s)
6) berms or other spill control devices
7) waste holding area(s)
8) storm sewers, private wells, dry wells, and abandoned water wells (if applicable)

In addition, provide available construction drawings, as-builts, building plans, civil plans, mechanical plumbing and electrical plans, and manufacturer specifications for all process and pretreatment equipment and machinery.

SECTION C. PRETREATMENT

1. **WASTEWATER PRETREATMENT**

Describe wastewater streams that are treated before discharge and the associated pretreatment method:		
Indicate which pretreatment methods are used at the facility:		
Grease Trap	YES	NO
Grease Interceptor	YES	NO
Solids Interceptor	YES	NO
Sand/Oil Interceptor	YES	NO
Lint Interceptor	YES	NO
Neutralization	YES	NO
Evaporation	YES	NO
Ultra Filtration	YES	NO
Reverse Osmosis	YES	NO
Other (describe)		

SECTION D. DISCHARGE CHARACTERISTICS

Complete the following information regarding chemicals stored on-site and analytes discharged to the sanitary sewer, waste hauler, or other location. If you do not know the amount of chemicals stored or analytes discharged, but know or suspect the analyte is present, mark an "X" in the tables.

1. METALS AND INORGANICS

ANALYTE	Amount Stored On-Site (lbs or gals)	Amount Discharged to Sanitary Sewer (lbs/day or gals/day)	Amount sent to Waste Hauler (lbs/day or gals/day)	Amount to Other (Describe) (lbs/day or gals/day)
Antimony				
Arsenic				
Asbestos				
Beryllium				
Cadmium				
Chromium				
Copper				
Cyanide				
Lead				
Mercury				
Nickel				
Selenium				
Silver				
Thallium				
Zinc				

2. VOLATILE ORGANIC COMPOUNDS (VOCs)

ANALYTE	Amount Stored On-Site (lbs or gals)	Amount Discharged to Sanitary Sewer (lbs/day or gals/day)	Amount sent to Waste Hauler (lbs/day or gals/day)	Amount to Other (Describe) (lbs/day or gals/day)
Acetone				
Benzene				
Bromobenzene				
Bromochloromethane				
Bromodichloromethane				
Bromoform				
Bromomethane				
2-Butanone (MEK)				
n-Butylbenzene				
sec-Butylbenzene				
tert-Butylbenzene				
Carbon disulfide				
Carbon tetrachloride				
Chlorobenzene				
Chloroethane				
Chloroform				
Chloromethane				
2-Chlorotoluene				
4-Chlorotoluene				
Dibromochloromethane				
1,2-Dibromo-3-chloropropane				
1,2-Dibromoethane (EDB)				
Dibromomethane				
1,2-Dichlorobenzene				

ANALYTE	Amount Stored On-Site (lbs or gals)	Amount Discharged to Sanitary Sewer (lbs/day or gals/day)	Amount sent to Waste Hauler (lbs/day or gals/day)	Amount to Other (Describe) (lbs/day or gals/day)
1,3-Dichlorobenzene				
1,4-Dichlorobenzene				
Dichlorodifluoromethane				
1,1-Dichloroethane				
1,2-Dichloroethane				
1,1-Dichloroethene				
cis-1,2-Dichloroethene				
trans-1,2-Dichloroethene				
1,2-Dichloropropane				
1,3-Dichloropropane				
2,2-Dichloropropane				
1,1-Dichloropropene				
cis-1,3-Dichloropropene				
trans-1,3-Dichloropropene				
Ethylbenzene				
Hexachlorobutadiene				
2-Hexanone				
Iodomethane				
Isopropylbenzene				
p-Isopropyltoluene				
Methylene chloride				
4-Methyl-2-pentanone (MIBK)				
Methyl-tert-butyl ether (MTBE)				
n-Propylbenzene				
Styrene				

ANALYTE	Amount Stored On-Site (lbs or gals)	Amount Discharged to Sanitary Sewer (lbs/day or gals/day)	Amount sent to Waste Hauler (lbs/day or gals/day)	Amount to Other (Describe) (lbs/day or gals/day)
1,1,1,2-Tetrachloroethane				
1,1,2,2-Tetrachloroethane				
Tetrachloroethene				
Toluene				
1,2,3-Trichlorobenzene				
1,2,4-Trichloroebenzene				
1,1,1-Trichloroethane				
1,1,2-Trichloroethane				
Trichloroethene				
Trichlorofluoromethane				
1,2,3-Trichloropropane				
1,2,4-Trimethylbenzene				
1,3,5-Trimethylbenzene				
Vinyl acetate				
Vinyl chloride				
Xylenes, Total				

3. SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

ANALYTE	Amount Stored On-Site (lbs or gals)	Amount Discharged to Sanitary Sewer (lbs/day or gals/day)	Amount sent to Waste Hauler (lbs/day or gals/day)	Amount to Other (Describe) (lbs/day or gals/day)
2-Chloronaphthalene				
2-Chlorophenol				
2-Methylnaphthalene				
2-Methylphenol				

ANALYTE	Amount Stored On-Site (lbs or gals)	Amount Discharged to Sanitary Sewer (lbs/day or gals/day)	Amount sent to Waste Hauler (lbs/day or gals/day)	Amount to Other (Describe) (lbs/day or gals/day)
2-Nitroaniline				
2-Nitrophenol				
2,2'-oxybis (1-Chloropropane)				
2,4-Dichlorophenol				
2,4-Dimethylphenol				
2,4-Dinitrophenol				
2,4-Dinitrotoluene				
2,4,5-Trichlorophenol				
2,4,6-Trichlorophenol				
2,6-Dinitrotoluene				
3-Nitroaniline				
3,3'-Dichlorobenzidine				
4-Bromophenyl phenyl ether				
4-Methylphenol				
4-Nitroaniline				
4-Nitrophenol				
4,6-Dinitro-2-methylphenol				
Acenaphthene				
Acenaphthylene				
Anthracene				
Benzo (a) anthracene				
Benzo (a) pyrene				
Benzo (b) fluoranthene				
Benzo (g,h,i) perylene				
Benzo (k) fluoranthene				

ANALYTE	Amount Stored On-Site (lbs or gals)	Amount Discharged to Sanitary Sewer (lbs/day or gals/day)	Amount sent to Waste Hauler (lbs/day or gals/day)	Amount to Other (Describe) (lbs/day or gals/day)
bis (2-Chloroethoxy) methane				
bis (2-Chloroethyl) ether				
Butylbenzylphthalate				
Carbazole				
Chrysene				
Di-n-butylphthalate				
Di-n-octylphthalate				
Dibenz (a,h) anthracene				
Dibenzofuran				
Diethylphthalate				
Dimethylphthalate				
Fluoranthene				
Fluorene				
Hexachlorobenzene				
Hexachlorobutadiene				
Hexachlorocyclopentadiene				
Hexachloroethane				
Indeno (1,2,3-cd) pyrene				
N-Nitrosodi-di-n-propylamine				
N-Nitrosodiphenylamine				
Naphthalene				
Nitrobenzene				
Pentachlorophenol				
Phenanthrene				
Phenol				

ANALYTE	Amount Stored On-Site (lbs or gals)	Amount Discharged to Sanitary Sewer (lbs/day or gals/day)	Amount sent to Waste Hauler (lbs/day or gals/day)	Amount to Other (Describe) (lbs/day or gals/day)
Pyrene				

4. OTHER ORGANICS

ANALYTE	Amount Stored On-Site (lbs or gals)	Amount Discharged to Sanitary Sewer (lbs/day or gals/day)	Amount sent to Waste Hauler (lbs/day or gals/day)	Amount to Other (Describe) (lbs/day or gals/day)
Acrolein				
Aldrin				
BHC(alpha)				
BHC(beta)				
BHC(gamma) (Lindane)				
BHC(delta)				
Chlordane				
DDD				
DDE				
DDT				
Dieldrin				
Endosulfan (alpha)				
Endosulfan (beta)				
Endosulfan sulfate				
Endrin				
Endrin aldehyde				
Heptachlor				
Heptachlor epoxide				
Isophorone				

ANALYTE	Amount Stored On-Site (lbs or gals)	Amount Discharged to Sanitary Sewer (lbs/day or gals/day)	Amount sent to Waste Hauler (lbs/day or gals/day)	Amount to Other (Describe) (lbs/day or gals/day)
TCDD (Dioxin)				
Toxaphene				
PCB-1016				
PCB-1221				
PCB-1232				
PCB-1242				
PCB-1248				
PCB-1254				
PCB-1260				

5. REPRESENTATIVE SAMPLING

Is sampling data representative of facility discharges to sanitary sewer available?	YES NO

6. CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative

Date

2-1-44 UTILITIES DIVISION; AUTHORITY OF PUBLIC WORKS DIRECTOR:

(A) Consistent with applicable federal and state laws and regulations (including, without limitation, the Federal Clean Water Act (33 U.S.C. §§ 1251 et seq.), federal pretreatment regulations (40 CFR Part 403), A.R.S. §§ 9-276 and 49-391, the Arizona Administrative Code §§ R18-9-B204(B)(6)(b)(ii) and R18-9-B206, and the City Charter, Article I, Section 3), the City has jurisdiction and authority to regulate all users of the POTW, including significant industrial users, with respect to the volume and flow rate of discharge to the POTW and to establish permissible limits of concentration for various specific substances, materials, waters or wastes that are prohibited from entering the POTW. The Public Works Director is authorized to establish, implement and enforce such limits and regulations.

(B) In addition to the prohibitions specifically listed under Section 2-1-39, the Public Works Director is authorized to establish local limits pursuant to 40 CFR 403.5(c). Table A of this section lists the pollutant concentration limits that have been established to protect the POTW against pass through and interference. Each user who discharges an indirect discharge to the POTW and is designated as a significant industrial user as defined in Section 2-1-9 shall not discharge or cause to be discharged at any entry point to the POTW any wastewater containing in excess of the following local limits:

TABLE A

Parameter	Local Limit	Sample Type
Arsenic	0.1 mg/l	Composite
Cadmium	1.2 mg/l	Composite
Copper	2.7 mg/l	Composite
Cyanide	1.0 mg/l	Grab
Fluoride	16.3 mg/l	Composite
Lead	0.4 mg/l	Composite
Mercury	0.001 mg/l	Composite
Nickel	1.04 mg/l	Composite
Silver	0.7 mg/l	Composite
Chromium	4.0 mg/l	Composite

TABLE A

Parameter	Local Limit	Sample Type
Zinc	2.6 mg/l	Composite

Note: mg/l = milligrams per liter.

(C) The City reserves the right to establish standards for substances not contained in Table A. The above limits apply at the point where wastewater is discharged to the POTW. The local limit shall be the maximum allowable concentration permitted in a discharge as measured, where feasible and appropriate for a given parameter, in a twenty-four (24) hour composite sample obtained by flow-proportional sampling techniques. If the Public Works Director determines that flow-proportional sampling is not feasible, the Public Works Director may allow composite sampling by time-proportional techniques or by compositing or averaging of one (1) or more grab samples.

(D) The Public Works Director may impose mass-based limits in addition to the concentration-based limits listed above. The Public Works Director may incorporate local limits on a user-specified basis into wastewater discharge permits where necessary to meet maximum allowable industrial loading limitations. Any violation of user-specified pollutant limitations as may be set forth by the Public Works Director shall subject the user to the same administrative actions, penalties, and enforcement actions as would be available for any other violations described in this chapter. (Ord. 4856-1313, 5-28-2013)

CITY OF PRESCOTT ARIZONA

WATER SERVICE AGREEMENT APPLICATION

Public Works – Permit Center
201 S. Cortez St., Prescott, AZ 86303
(P) 928.777.1269

Water Service Agreement Applications are submitted in accordance with City Water Management Policy. Submit all required documents directly to the Permit Center at 201 S. Cortez St, Prescott, AZ 86302. Please print your contact information legibly.

APPLICANT INFORMATION

Applicant: _____ Contact Person: _____
Address: _____ City/State/Zip: _____
Phone: _____ Email: _____

Property Owner: _____ Contact Person: _____
Address: _____ City/State/Zip: _____
Phone: _____ Email: _____

PROJECT SITE

Address: _____
Current Zoning: _____ Proposed Zoning: _____
Assessor's Parcel Number(s) of Existing Property:
_____-_____-_____ _____-_____-_____ _____-_____-_____ _____-_____-_____

Existing Water Service (Y/N): _____ Existing Sewer Service (Y/N): _____
Existing Well (Y/N): _____ If Yes, Well Registry No.: _____

PROJECT DESCRIPTION

Is the project Residential or Commercial? _____
Please provide brief description: _____

# of Proposed Units: _____ # of Proposed Lots: _____

Has a Water Demand Analysis been completed (commercial)? _____
Has a building permit application been submitted? _____
Has a Planning and Zoning Recommendation been made? _____

Applicant Signature: **Date:**

OFFICE USE ONLY	
Assigned Tracking No. WSA____-_____	Date entered _____

Updated 2/3/2020

March 26, 2024

NEW LARGE WATER USERS

GREATER THAN 250k GPD

- Must obtain approval of Water Conservation Plan

GREATER THAN 500k GPD

- Must obtain approval of Water Conservation Plan;
- ***AND***, demonstrate that 30 percent of water consumed on site comes from recycled or conserved sources
- ***AND***, fit within the City of Phoenix's resource limitations

Sec. 37-52.04. Large water users.

A. A large water user may not connect to the City public water system or use City water except as provided by this division.

B. *Application to become a large water user.*

1. An applicant must submit to the Director a sustainable water service application, which must include a water conservation plan, if any of the following apply:

a. An applicant will be a new customer, and the applicant's projection of the applicant's water use, as reviewed by the Director, equals or exceeds 250,000 gallons per day.

b. An applicant is an existing customer and requests water-meter upsizing that will allow for water use that equals or exceeds 250,000 gallons per day.

c. An applicant is an existing customer whose water use equals or exceeds 250,000 gallons per day and requests water-meter upsizing.

2. For undeveloped property, a sustainable water service application must be submitted at the time the applicant submits for any development entitlements. An applicant who will become or is a large water user on previously developed property must submit a sustainable water service application at the time the applicant requests water-meter upsizing.

3. The sustainable water service application must identify the phasing of construction or development, the approximate number and size of the structures to be served, a reasonable description of the nature and type of water use proposed on the property, and a reasonable estimate of the projected annual and monthly water demand.

4. The water conservation plan must include techniques and technologies that will reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or establish use of recycled water by the large water user.

C. *City review of sustainable water service applications and water conservation plans.*

1. The Director will review properly completed sustainable water service applications and water conservation plans. The Director may require additional information to be submitted as the Director deems necessary, and the applicant must submit any additional information requested within 60 days of receiving the request.

2. The Director will allow the applicant to connect to the City public water system and use City water as a customer of the City public water system if all of the following apply:

a. The Director determines, in the Director's sole and absolute discretion, that the sustainable water service application and water conservation plan demonstrate that the large water user will undertake to use water as efficiently as is practicable and to ensure that water is not wasted. In determining whether water will be used as efficiently as is practicable, the Director will consider if the applicant's facility is existing and the practicability of retrofitting the existing facility with water conserving technologies and practices.

b. The Director, in the Director's sole and absolute discretion, determines that the proposed water use is consistent with the water master plan.

c. The applicant's projected use of water is less than 500,000 gallons per day.

3. If an applicant is projected to use 500,000 gallons per day of water or more, the Director may grant the applicant's request to connect to the City public water system, unless the Director, in the Director's sole and absolute discretion, finds that any of the following apply:

a. The applicant's sustainable water service application and water conservation plan fail to demonstrate that the large water user will undertake to use water as efficiently as is practicable and to ensure that water is not wasted. In determining whether water will be used as efficiently as is practicable, the Director will consider if the applicant's facility is existing and the practicability of retrofitting the existing facility with water conserving technologies and practices.

b. The applicant's water use would be incompatible with the City's available water resources.

c. The applicant's water use would be inconsistent with the water master plan.

d. The applicant's water use would be of an insufficient economic benefit to warrant the large use of water.

e. The applicant has not agreed to use of recycled water to offset at least 30 percent of its water use or such other percentage as the Director determines is the maximum use of recycled water that is warranted for the applicant's facility.

4. In making the determination whether to allow an applicant that is projected to use 500,000 gallons per day of water or more to connect and be served by the City public water system, the Director shall consider all of the following:

a. The availability of water to which the City has legal rights and the physical ability to use that is not needed to serve existing customers and anticipated demand as set out in the water master plan.

b. Whether the proposed water use is consistent with the water master plan.

c. Economic impact studies submitted by the applicant that provide evidence of the projected impact resulting from the proposed water use to the City's economy and the economic value of the water to be used expressed in dollars/gallons of water.

d. Whether the proposed water use will support a key industry consistent with the City's economic development and education strategic plan.

e. The impact of the water use to the City's designation of assured water supply under Section 45-576, Arizona Revised Statutes.

f. Any extraordinary conservation techniques and technologies proposed by the applicant in the water conservation plan.

g. Whether the applicant will convey or assign to the City all legal rights to a physical water supply that will fully offset the applicant's projected water use, which water supply, when assigned to the City, will meet all requirements of Section 45-576, Arizona Revised Statutes, and the regulations adopted by DWR to implement that section.

h. Any other information the Director deems relevant.

5. A large water user who becomes a customer of the City is subject to all terms and conditions of service as specified by this chapter.

D. As a term and condition of continued water service for a large water user, both of the following must occur:

1. A large water user must submit an updated water conservation plan to the Director every five years.

2. The Director determines, in the Director's sole and absolute discretion, that the updated water conservation plan demonstrates that the large water user will use water as efficiently as is practicable and ensure that water is not wasted.

E. *Terms and conditions of service for large water users.*

1. In addition to the other terms and conditions of water service as specified by this chapter, the following are terms and conditions of service of a large water user:

a. The large water user may not in any year use water in excess of 120 percent of the amount set out in the applicant's sustainable water service application, as that application has been approved by the Director.

b. The large water user must implement, operate, and maintain all use of recycled water, techniques, and technologies consistent with the large water user's most recently approved water conservation plan.

2. In addition to any other sanction available under this chapter, the Director may suspend water service to a large water user who violates this subsection. The Director will provide notice of any discontinuation of water service as provided by Section 37-88(B). If water service is suspended under this subsection, the water service will not be restored until the large water user has come into compliance with the requirements of this subsection. (Ord. No. G-7237, § 2, 2024)

The Phoenix City Code is current through Ordinance G-7325, passed November 20, 2024.

Disclaimer: The City Clerk's Office has the official version of the Phoenix City Code. Users should contact the City Clerk's Office for ordinances passed subsequent to the ordinance cited above.

City Website: www.phoenix.gov

Hosted by General Code.

TO:	MAYOR AND CITY COUNCIL
AGENDA:	February 4 Subcommittee on Water Issues
DATE:	February 4, 2025
DEPT:	Public Works
ITEM #:	3.F
SUBJECT:	2022 Water Management Policy Discussion - Current Residential & Non-Residential Water Budget Overview for January 1, 2025 through January 24, 2025.

ITEM SUMMARY

This item is for a review and discussion regarding the current residential and non-residential water budgets, including projects that have received approval for water between January 1, 2025 and January 24, 2025.

BACKGROUND

The 2022 Amended Water Policy, Guidelines 11-13, established a semi-annual water budget for residential and non-residential projects. The budget set for January 1, 2025 through June 30, 2025 for residential projects was 25 acre-ft/year and the budget set for non-residential projects was 25 acre-ft/year.

Between January 1, 2025 and January 24, 2025, no new residential projects were approved. The total remaining residential budget is 25 acre-ft.

Between January 1, 2025 and January 24, 2025 no new non-residential projects were approved. The total remaining non-residential budget is 25 acre-ft.

Between January 1, 2025 and January 24, 2025 a total of 4 projects were approved under existing contracts. All 4 of these were new single-family homes located primarily within Groundwater Subdivisions. The total number of residential dwelling units approved under existing contracts was 4, totaling 0.68 acre-ft/year. Projects under existing contract are not included in the water budget (Guideline 9).

FINANCIAL IMPACT

None at this time.

RECOMMENDED ACTION

This item is for discussion only. No formal action will be taken.

ATTACHMENTS

1. Monthly Water Budget Update Feb 2025 WIS

RESIDENTIAL PROJECTS

	PERMIT TYPE	DESCRIPTION	PERMIT NUMBER	AFY	APPROVAL TYPE	WATER SERVICE AGREEMENT	DATE APPROVED

TOTAL APPROVED	0.00
TOTAL BUDGET	25.00
TOTAL REMAINING	25.00

NON-RESIDENTIAL PROJECTS

	PROJECT TYPE	DESCRIPTION	PERMIT NUMBER	AFY	APPROVAL TYPE	DATE APPROVED

TOTAL APPROVED	0.00
TOTAL BUDGET	25.00
TOTAL REMAINING	25.00

WATER POLICY TRACKING TABLE
APPROVED PROJECTS

City of Prescott
Public Works Department
928-777-1130

	PERMIT TYPE		# OF RES UNITS	PERMIT NUMBER	AFY	APPROVAL TYPE	EXISTING ENTITLEMENT	DATE APPROVED	DEMAND METHOD
1	RESIDENTIAL	SFR - HERITAGE UNIT 3 PH	1	B2412-1581	0.17	N/A EXISTING CONTRACT/AGREEMENT	GROUNDWATER SUBDIVISION	1/6/2025	WRMM MULTIPLIER
2	RESIDENTIAL	SFR - RANCH at PRESCOT	1	B2412-193	0.17	N/A EXISTING CONTRACT/AGREEMENT	GROUNDWATER SUBDIVISION	1/6/2025	WRMM Multiplier
3	RESIDENTIAL	SFR - SUMMIT POINTE	1	B2412-003	0.17	N/A EXISTING CONTRACT/AGREEMENT	GROUNDWATER SUBDIVISION	1/13/2025	WRMM MULTIPLIER
4	RESIDENTIAL	SFR - STARDUST ESTATES	1	B2412-113	0.17	N/A EXISTING CONTRACT/AGREEMENT	GROUNDWATER SUBDIVISION	1/16/2025	WRMM MULTIPLIER

	Number of Projects	Res Units	AF
Total Residential	**4**	**4**	**0.68**
Total Non-Residential	**0**	**0**	**0.00**
Totals	**4**	**4**	**0.68**

Existing Entitlement for water can be in the following forms:
Groundwater Subdivision - Committed demand to platted areas as of 1998
Contract - Recorded agreement with the City for an allocated amount of water for a project of project area.

Last Updated 1/24/2025