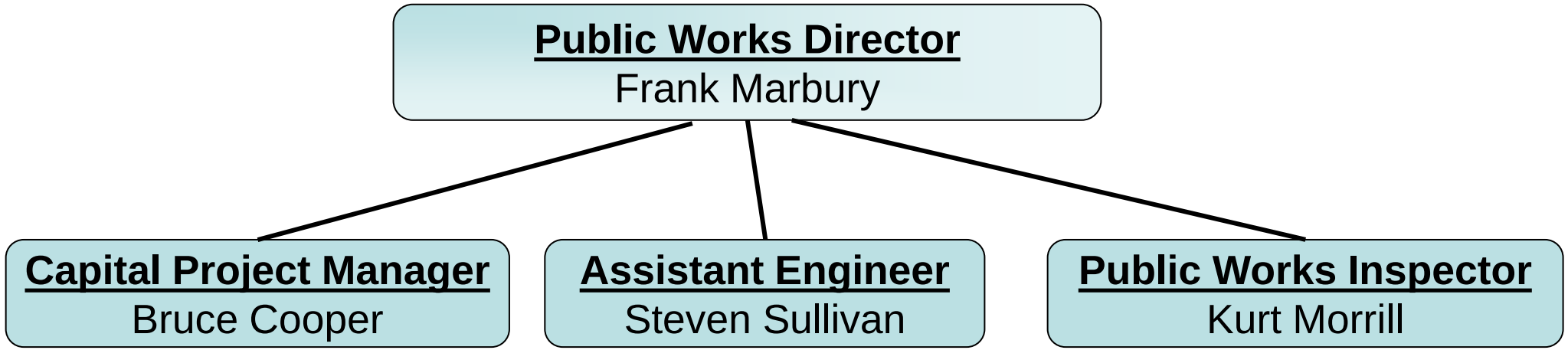
Town of Chino Valley
Engineering

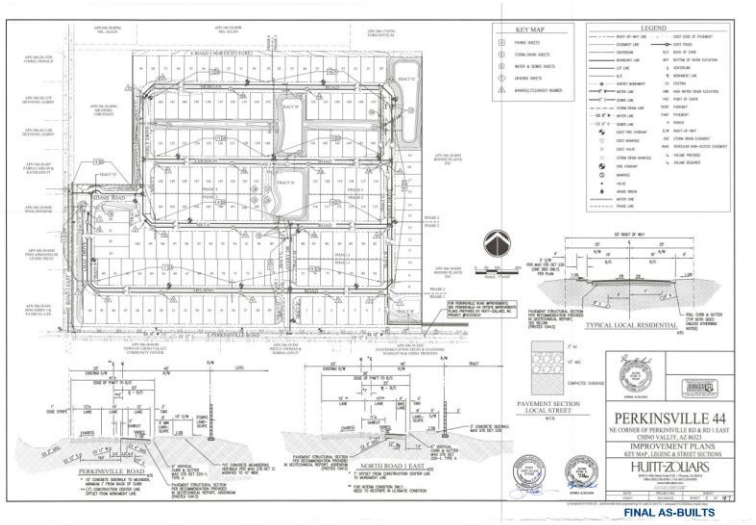
April 2024

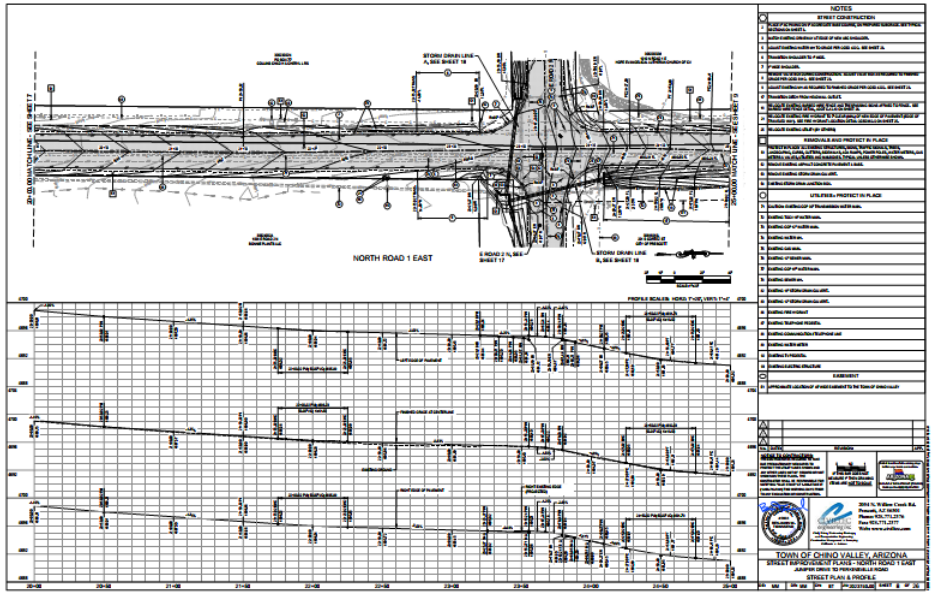
Engineering



Engineering

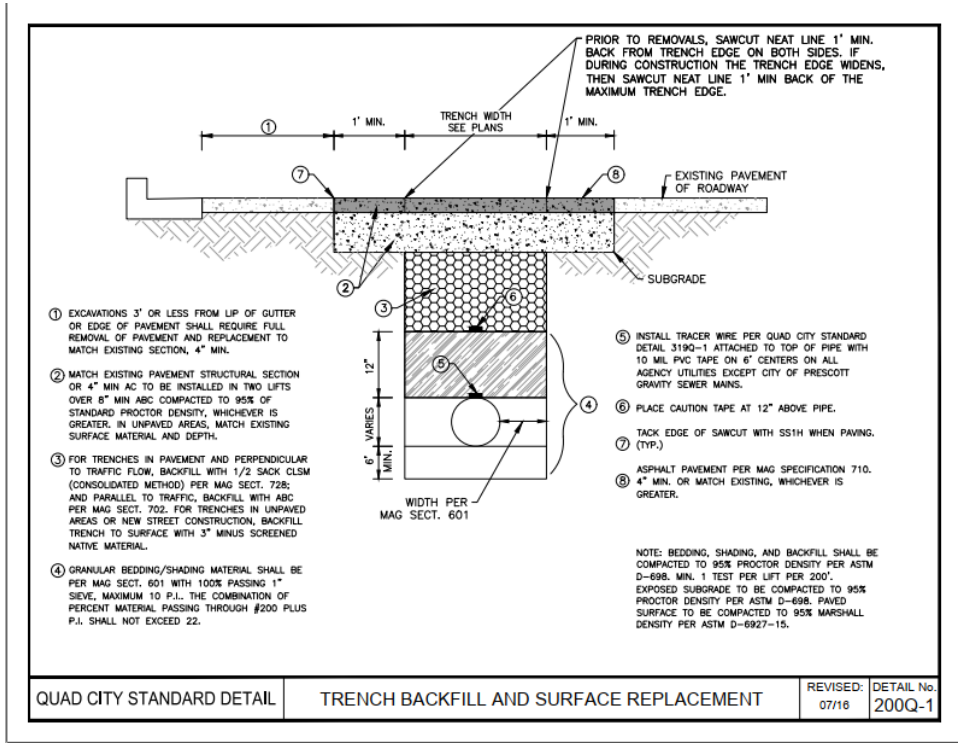
- Provides preliminary and technical review of public works features of proposed development.
- Reviews streets, traffic, water, sewer, and grading and drainage proposals and plans.





Engineering

- Reviews and modifies Engineering Standards
- Reviews and recommends changes to Ordinances and policies



WATER SERVICE CONNECTIONS

§ 51.075 CONNECTION TO WATER MAINS REQUIRED, EXISTING RESIDENTIAL OPTIONAL.

(A) Unless serviced by another public water provider, where commercial, industrial and other non-residential property is located on a street in which a water main is laid, the property shall be connected with the town's water system. These service connections shall extend at right angles from the main to the curbside, or property line, and shall be installed in accordance with town standard details.

(B) A new home on residential property located upon a street where a town water main is located shall be connected with the town water system at the time of construction. The connection shall not prohibit the construction and operation of a non-exempt well in accordance with state ADWR regulations.

(C) Where a new town water main is laid on a street with existing residential homes that have an on-site domestic well, the properties may elect to continue use of their on-site well in lieu of connecting to the town system. In the event that the properties do connect to the town system, either at the time of original line construction or at some later date, the on-site well shall be properly sealed and abandoned. In accordance with ADWR and ADEQ standards, the abandonment shall be inspected, confirmed and documented by the Utility Department.

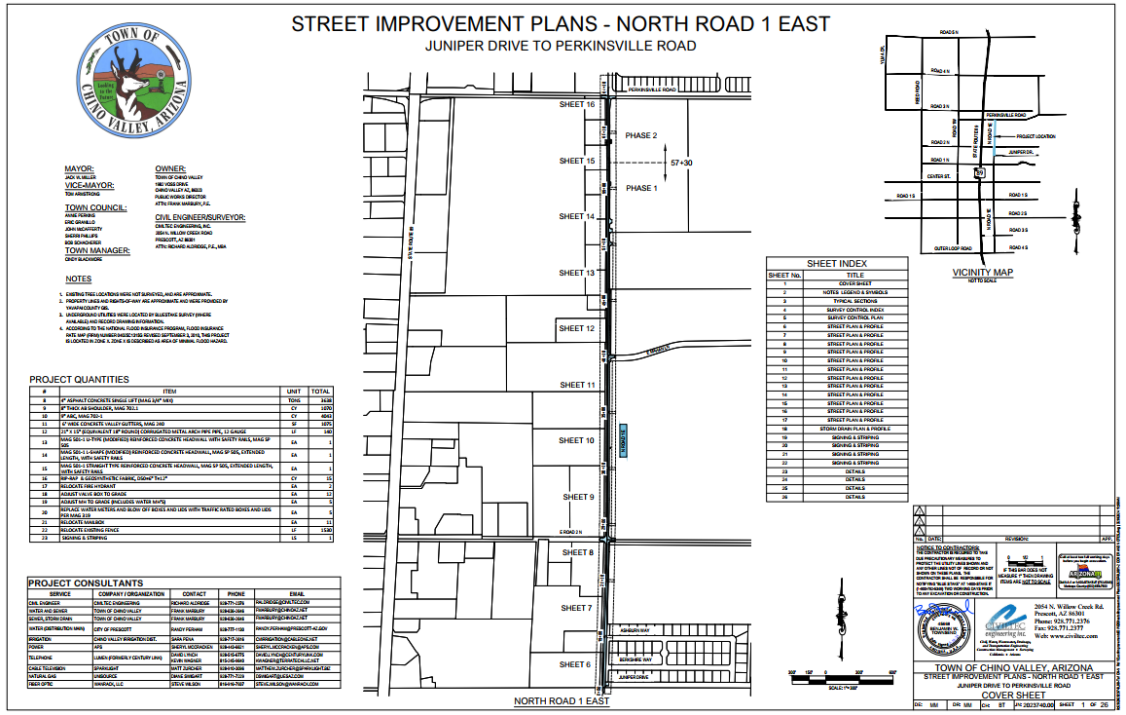
(D) The number, location, manner of construction and sizes of all service connections shall be subject to the approval of the Public Works Director.

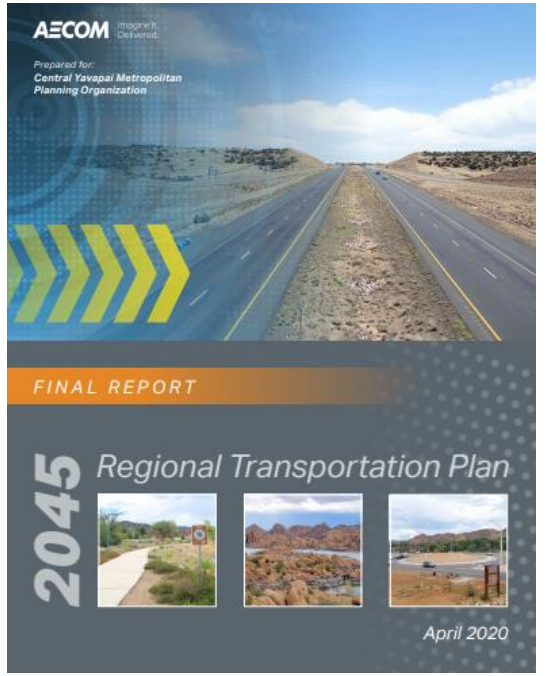
(E) New subdivisions containing lots of less than one acre shall connect each lot to the town's water system. New subdivisions containing lots of 1 acre or greater which are within 300 feet of the town's water system shall connect each lot to the town's water system.

(F) Private systems and wells shall not be constructed where the town's public water system is available at the property line of a lot, or within 300 feet of the property line of a subdivision.

Engineering

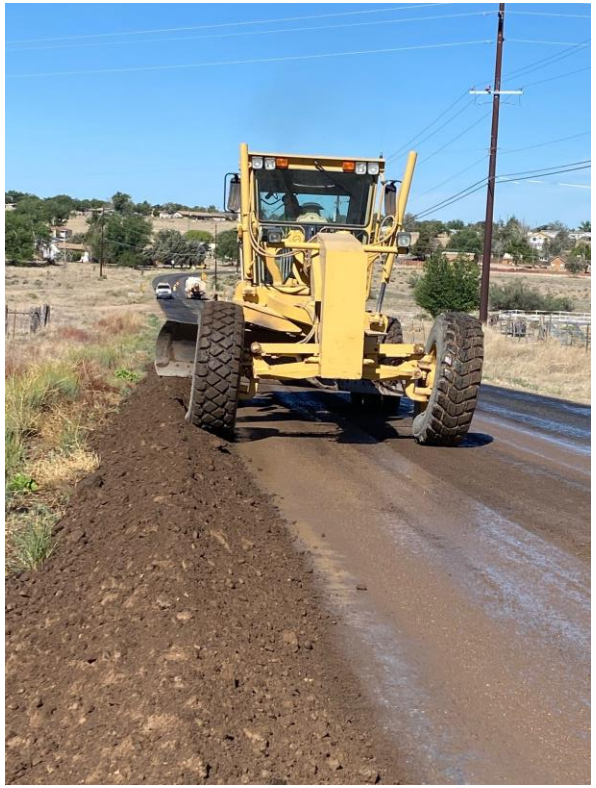
- Works with partner agencies on Regional Planning Issues
- Develops Bid Packages for Capital Projects including design, construction management, planning and budgeting





Engineering

Plans, budgets, and specifies new equipment purchases



Engineering

Accomplishments completed in FY 2023

- Constructed the Sewer Extension and Street Reconstruction of S. Road 1 East from Fletcher Court to E. Road 3 South

Engineering

Accomplishments completed in FY 2023

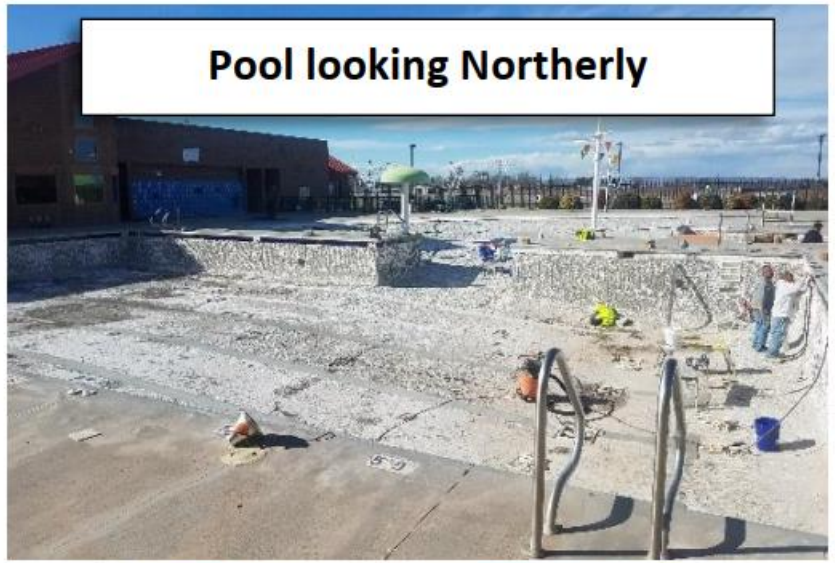
- Began Water and Sewer Extension along E. Perkinsville Road from N. Road 1 East to Highway 89

Engineering

Accomplishments completed in FY 2023

- Repaired the Aquatics Building's settling foundation and replastered the pool


Aquatic Center Building


Pool looking Northerly


Pool looking Southerly

Engineering

Accomplishments completed in FY 2023

- Performed emergency pavement repairs in key intersections and areas around town

Engineering

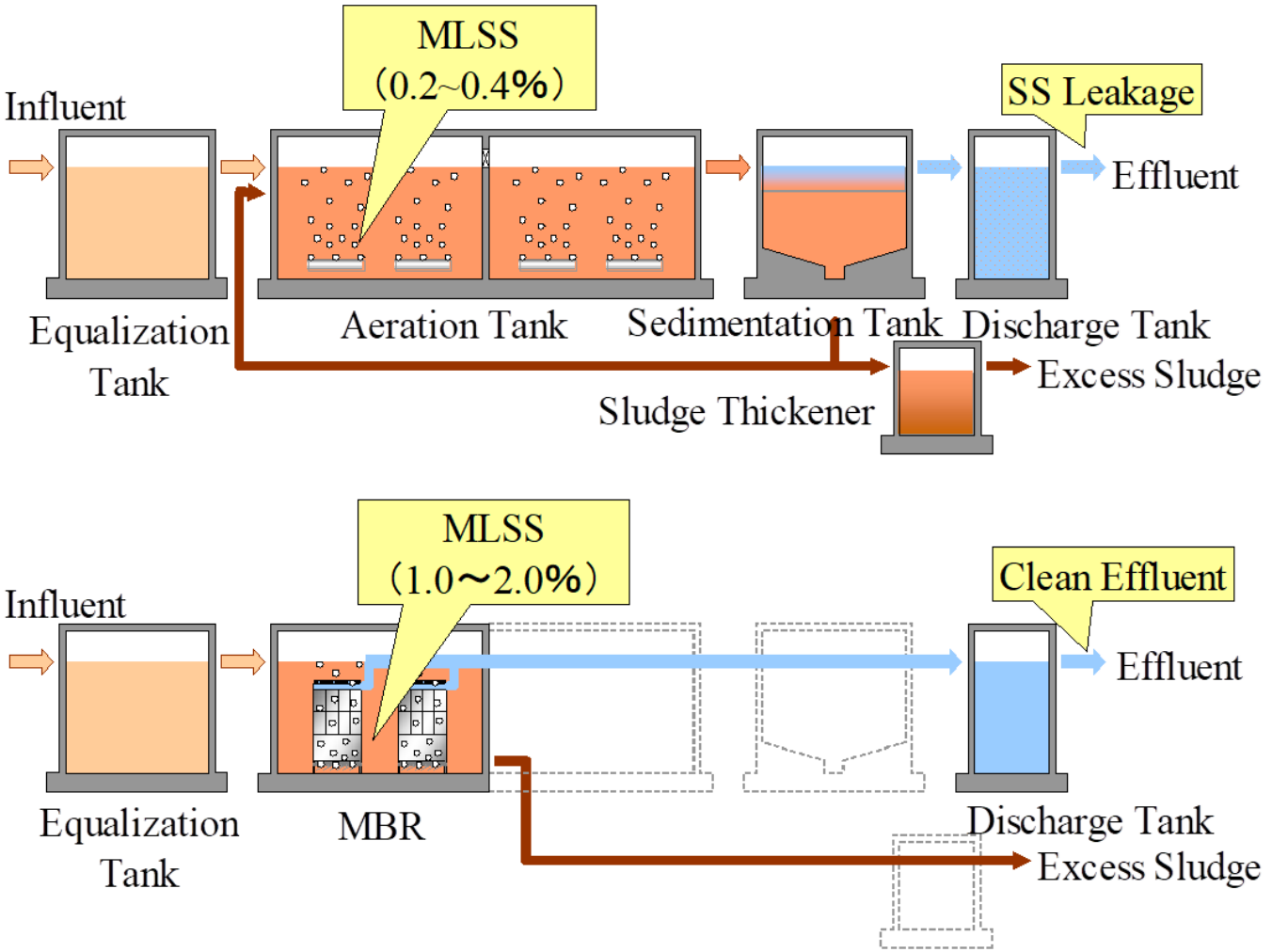
Objectives for Spring of 2024

- Complete Perkinsville Water and Sewer Extension to Hwy 89
- Reclamation Facility Design and Possible Construction
- Reconstruct Road 1 East from Juniper Dr. through Road 2 North to Perkinsville Rd.
- Install Sewer to Picacho Road for future connection to Yavapai Estates and developments at Road 4 South and Highway 89
- Repave Reed Road from Road 1 North to Road 2 North (and to 3 North if funds can be found)
- Overlay Outer Loop Road from Road 1 West to Highway 89
- New Roof for the Library
- New Kitchen for the Senior Center (Grant funded)
- New Bathrooms for the Police Range
- Complete Integrated Water Master Plan
- Continue to Improve Pavement Management System
- Finish Old PD Building Renovations

Engineering

Reclamation Facility Upgrades

- The current plant utilizes Membrane BioReactor (MBR)technology.
- The one thing missing from the Chino Valley Plant is the Equalization Tank
  - It will be determined during the design process if a sludge thickener is needed

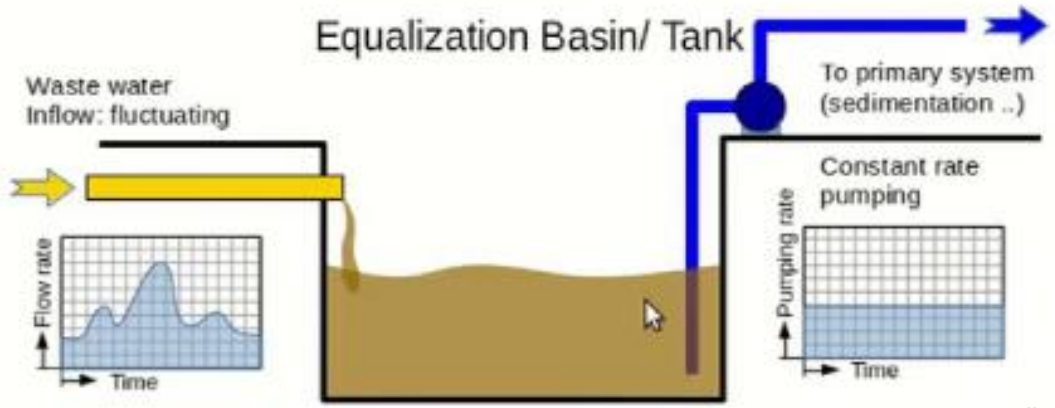


Engineering

How does it work

: Equalization basin / tank

- What is equalization tank?
- Mathematical Example of volume design.



*Credit Miah M. Hussainuzzaman

Engineering

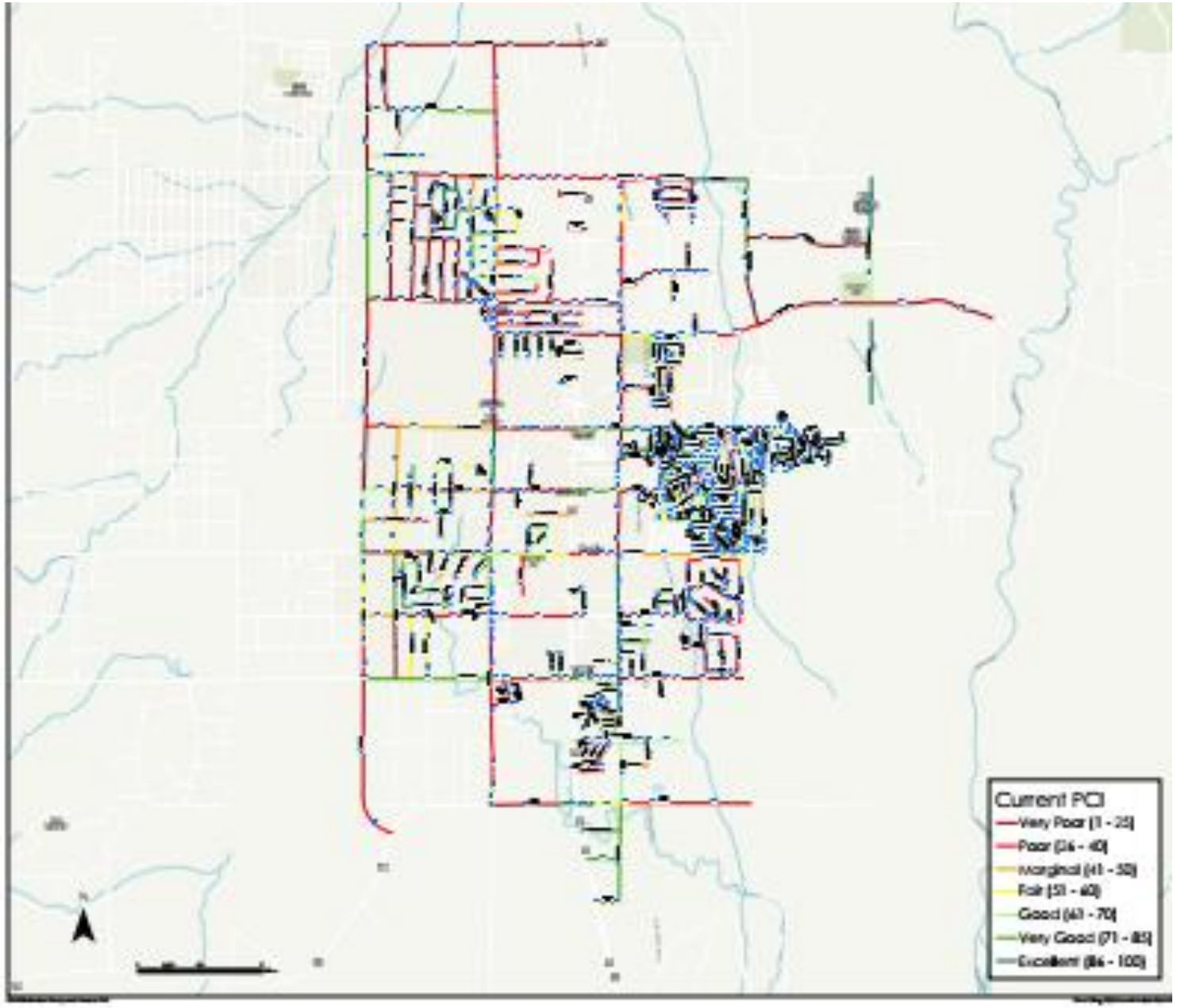
Other Upgrades Needed

- Air Delivery Improvements (Air is the key for a successful treatment facility)
- Make sure all systems are redundant and resilient
  - Improve headworks screening as needed
  - Add provisions for sludge thickener and/or a second dewatering press
- Replace obsolete RV sterilization equipment
- Replace outdated electronic controls
- Make sure safety monitoring systems are up to date
- Improve site for accessibility (connect sidewalks and driveways)
- Design a pilot PFAS removal system
- Look at a micro-carbon dosing system
- Construct Drying Beds
- Prepare for future Odor Scrubbing systems

Engineering

Pavement Management

- Completed Pavement Management Analysis for the Town
- Every paved street was inventoried and rated for condition
- Average PCI = 48 for Town
- 48% of streets ranked under 40
- Goal is usually to have average pci of 80 or above with no streets under 40



Engineering

Pavement Management

- Pavement Management usually tries to spend less money on keeping the good streets in good condition
- Poorer condition streets should wait until absolutely necessary

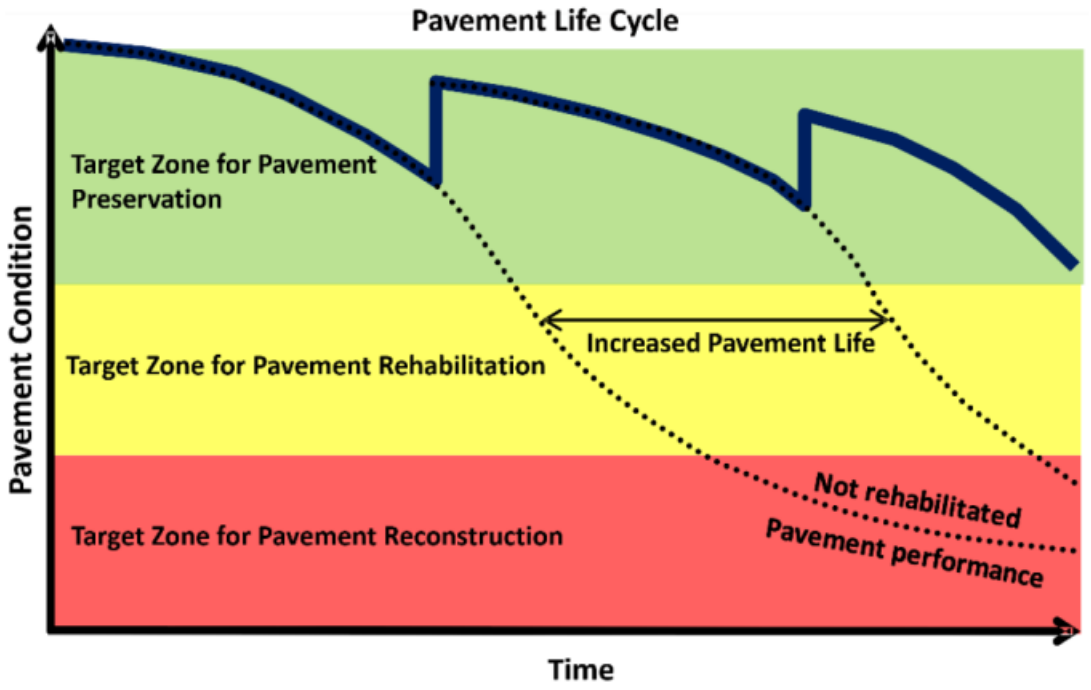
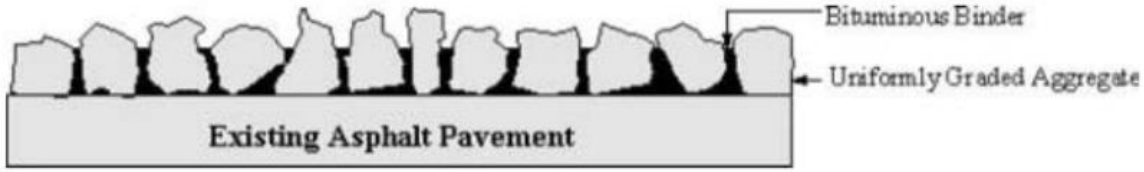


Figure 5 - Pavement Life Cycle Curve

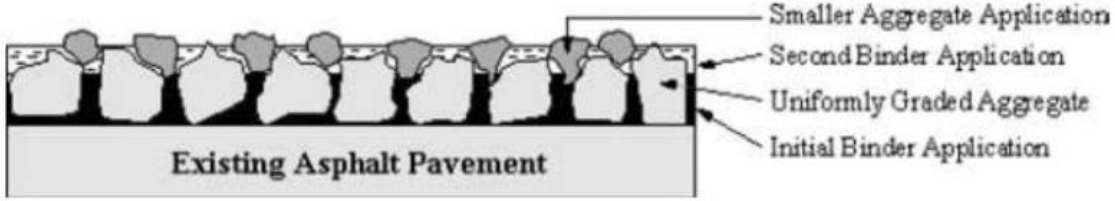
Engineering

Pavement Management

- Green Pavement Repair Techniques
  - Crack Seal
  - Chip Seal
  - Slurry Seal



Single chip seal.



Double chip seal.

Slurry Seal

Engineering

Pavement Management

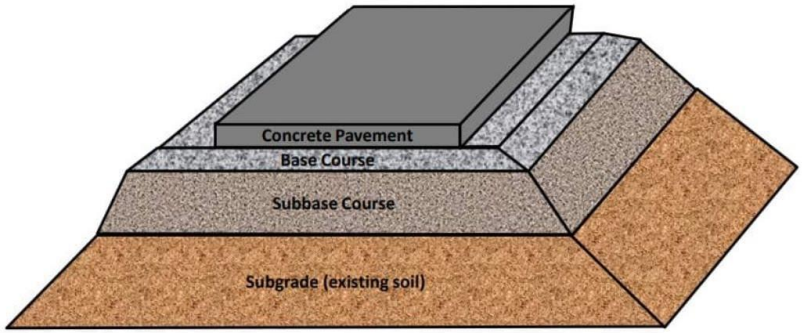
- Yellow Pavement Repairs
  - Overlay
  - Mill and Overlay

Engineering

Pavement Management

- Red Reconstruction
  - Full Depth Reconstruction

Layers of Flexible Pavement



- The Unique Problem Chino Valley Faces is that Most of the Town Streets are only Chip Seal over dirt. There is no ‘true’ pavement structure.

Engineering

Pavement Management

- Green Treatments –
  $20k to $62k per mile
- Yellow Treatments –
  $350k to $500 k per mile
- Red Treatments –
  $1.6 million and up
  $3.2 million to add curb gutter and sidewall

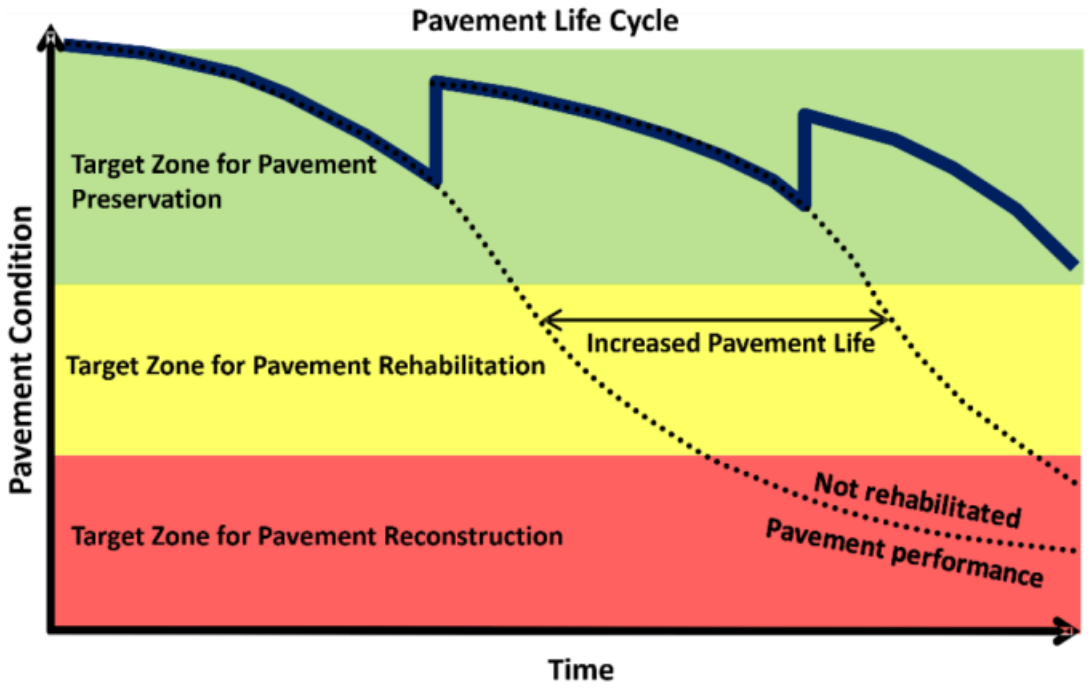


Figure 5 - Pavement Life Cycle Curve

Engineering

Pavement Management

- Chino Valley spends between $1 Million and $2.5 Million depending on the year
- $1 Million a year means we are losing ground
- $2.5 Million is about break even
- $88.5 Million is needed to fix everything
  or $40 million is needed just to repair the streets that are failing (PCI under 40)

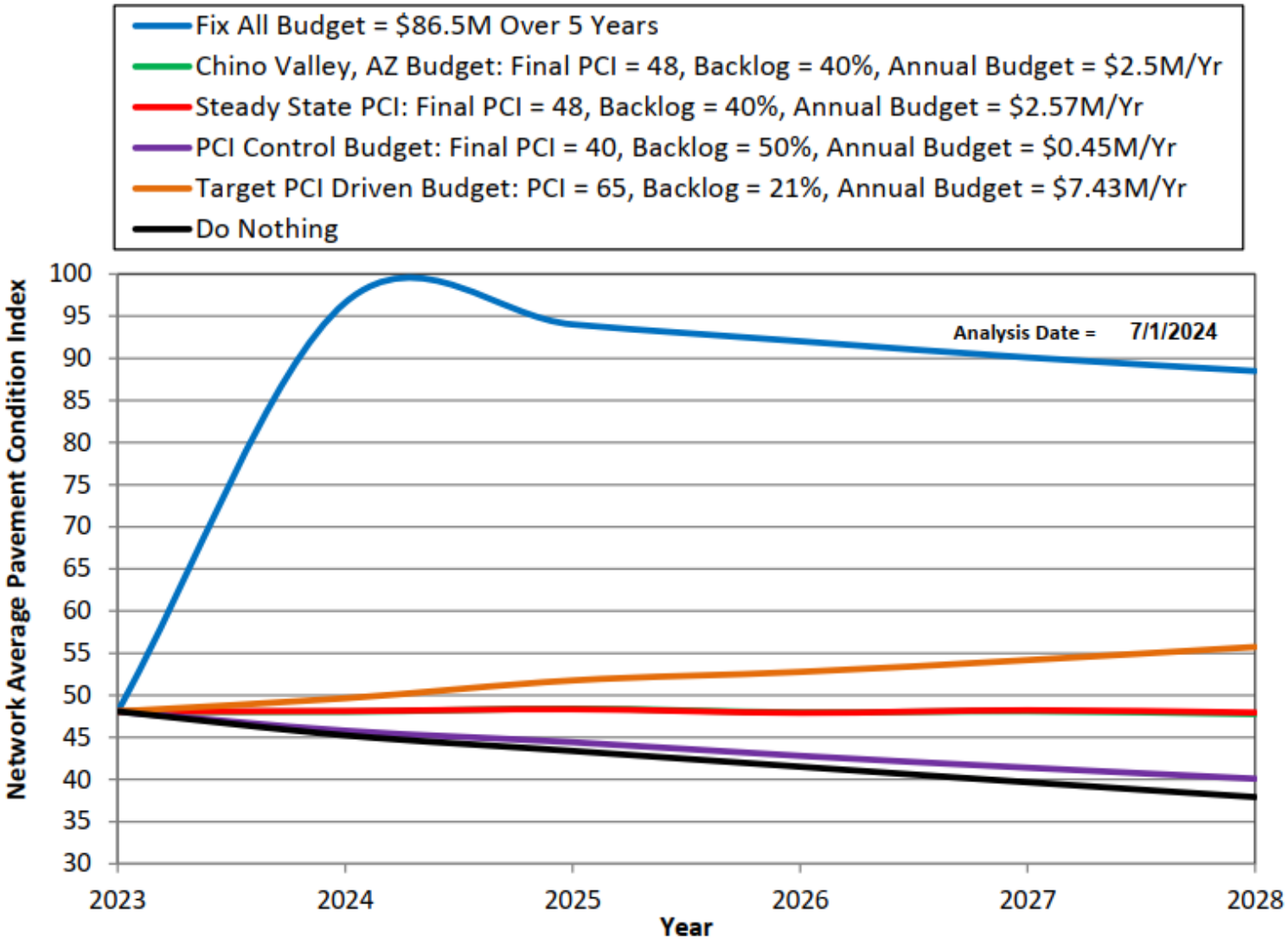


Figure 18 – Five-year Annual PCI

STREETS FIVE YEAR CIP (FY23-24 / FY27-28)

PROJECT / MAJOR	DESIGN ESTIMATE	ROW ESTIMATE	CONSTRUCTION ESTIMATE	TOTAL
N ROAD 1 EAST RECONSTRUCTION: Juniper Dr to Perkinsville Rd (1 mile, section 2)	$ 320,000	$ 490,000	$ 4,980,000	$ 5,790,000
(Sewer Component)	$ 120,000	$ -	$ 1,870,000	$ 1,990,000
N REED ROAD RECONSTRUCTION: Rd 1 North to Rd 3 North (1.5 miles, section 4)	$ 280,000	$ 580,000	$ 4,450,000	$ 5,310,000
E PERKINSVILLE ROAD RECONSTRUCTION: Jerome	$ 270,000	$ 850,000	$ 4,230,000	$ 5,350,000

STREETS FIVE YEAR CIP (FY23-24 / FY27-28)

PROJECT / MAJOR	DESIGN ESTIMATE	ROW ESTIMATE	CONSTRUCTION ESTIMATE	TOTAL
SUBTOTAL MAJOR PROJECTS:	$ 2,750,000	$ 3,670,000	$ 43,440,000	$ 49,860,000

PROJECT / MINOR (LOCAL)	DESIGN ESTIMATE	ROW ESTIMATE	CONSTRUCTION ESTIMATE	TOTAL
SUBTOTAL MINOR (LOCAL) PROJECTS:	$ 2,141,000	$ -	$ 34,020,000	$ 36,161,000
GRAND TOTAL ALL PROJECTS:	$ 4,891,000	$ 3,670,000	$ 77,460,000	$ 86,021,000

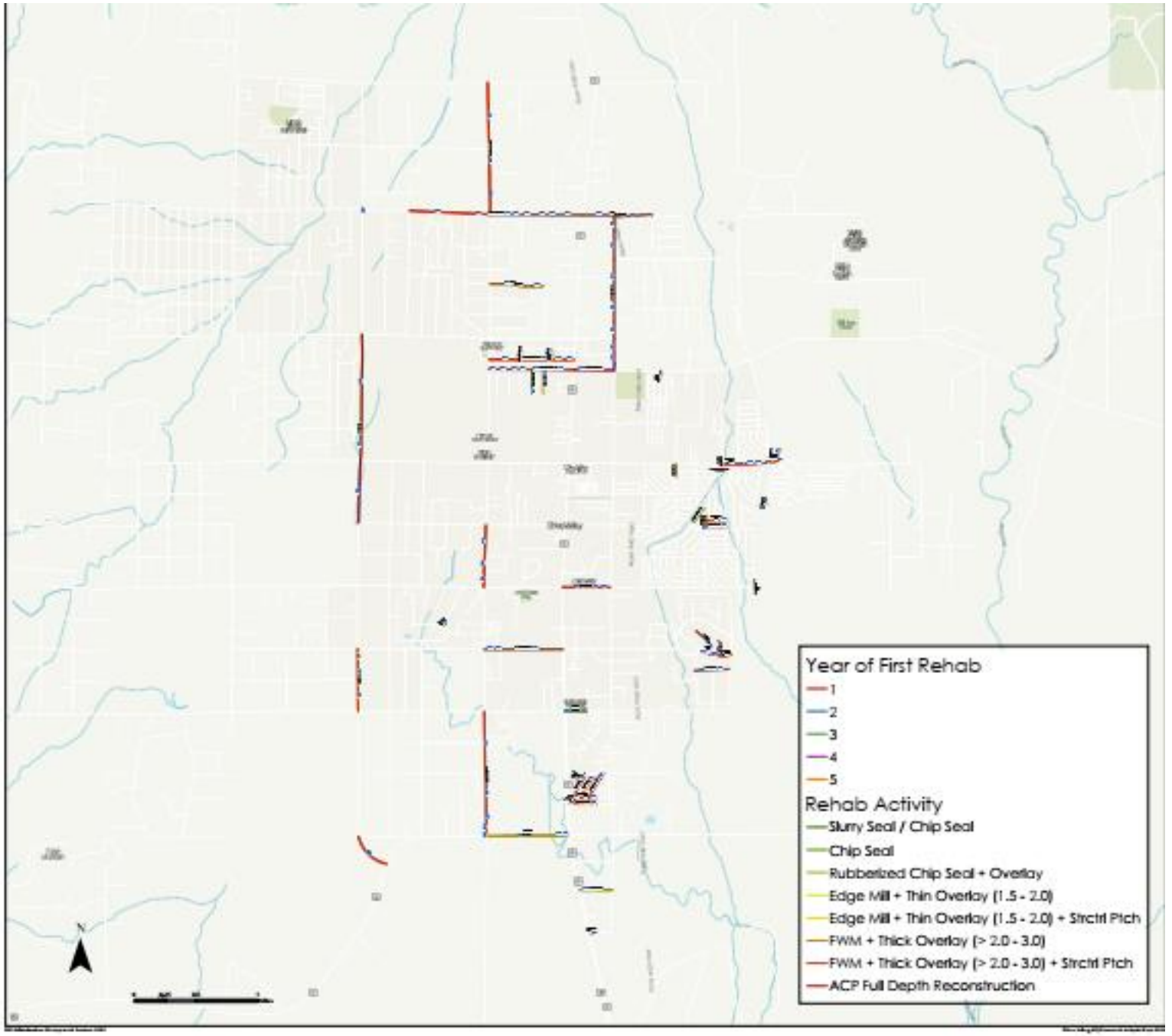
LUNA ESTATES: (SR-89 to Rd 1 West) I would recommend water & sewer. Not included. (2 miles, section 4 & 24')	$ 240,000	$ -	$ 3,810,000	$ 4,050,000
SUNRISE SUBDIVISION (Double Chip, 24', 1.5 miles)	$ 81,000	$ -	$ 1,300,000	$ 1,381,000
CHINO LAKES (Double Chip, 24', 5 miles)	$ 260,000	$ -	$ 4,120,000	$ 4,380,000
VISTA GRANDE ESTATES (Double Chip, 24', 5.25 miles)	$ 270,000	$ -	$ 4,350,000	$ 4,620,000
YAVAPAI MOBILE HOME ESTATES (24', 1.25 miles)	$ 110,000	$ -	$ 1,700,000	$ 1,810,000
RODEO DRIVE: @ OHM (match previous section, 0.5 mile	$ 220,000	$ -	$ 3,490,000	$ 3,710,000
SUBTOTAL MINOR (LOCAL) PROJECTS:	$ 2,141,000	$ -	$ 34,020,000	$ 36,161,000
GRAND TOTAL ALL PROJECTS:	$ 4,891,000	$ 3,670,000	$ 77,460,000	$ 86,021,000

Now $88.5 million

Engineering

Pavement Management

- What to do?
- Staff will continue to plan what they can with funding available
- A citizen committee for capital programs will review staff recommendations for Council
- Truthfully another major funding source is needed in order to make any substantial progress



Capital Improvement Plan

A Capital Improvement Plan (CIP) is a comprehensive outline to schedule and prioritize major infrastructure investments or significant expenditures.

- usually over a 3-5 years, sometimes more
- serves as a strategic plan for the major assets of the Town
  - Streets, Utilities, Buildings, Parks, etc.
- typically includes an inventory of existing assets, identifies areas requiring improvement or expansion, estimates costs, outlines funding sources, and establishes timelines for project implementation.
- helps ensure that capital investments align with long-term goals and community needs while managing financial resources effectively.

Capital Improvement Plan Citizens Advisory Committee (CIPCAC)

The CIPCAC will provide constituents the opportunity to provide valuable input on the Town of Chino Valley's CIP in accordance with the Town values of safety, integrity, honesty, transparency, and communication. The responsibility of this committee will be to become familiar with and advise the Town Council, through staff, on the Town's annual Capital Improvement Program during the Town's annual budget process.

The Committee will be appointed by Council and will be comprised of residents and/or business owners that live and do business within the Town area.

Capital Improvement Plan - Streets

- The Pavement Management Program contains the street inventory
- It will eventually also contain the 5 Year CIP for Programmed Street Maintenance
- Current Scheduled Projects include
  1. W. Reed Road from N. Road 1 North to N. Road 2 North ($1.1M)(FY25)
  2. W. Outer Loop from S. Road 1 West to Highway 89 ($550k)(FY25)
  3. E. Perkinsville Road from Jerome Junction to end of Pavement ($5.35M)(FY 26 and 27)
  4. S. Road 1 West from W. Road 2 South to W. Road 1 South (1.5M)(FY28)
  5. E. Center Street from Road 1 East to Cactus Wren ($6 M) (FY29)
- Other Local Street Needs include Chino Meadows 1 ($4M)
  Chino Meadows 2 ($12M)
  Sunrise Subdivision ($1.4M)
  Luna Estates ($4M)
  Chino Lakes ($4.4M)

Example CIP - Water

FUNDING SOURCE	YEAR 1 FY23-24	YEAR 2 FY24-25	YEAR 3 FY25-26	YEAR 4 FY26-27	YEAR 5 FY27-28
Beginning Fund Balance	$ 221,757	$ 71,757	$ 121,757	$ 71,757	$ 21,757
Transfter from Water Enterprise	$ 50,000	$ 50,000	$ 50,000	$ 50,000	
WIFA LOAN	$ -	$ 2,200,000		$ 2,000,000	
OHM Land Sales	$ 2,000,000	$ 2,000,000		$ 1,000,000	$ 1,000,000
TOTAL AVAILABLE FUNDS:	$ 2,271,757	$ 4,321,757	$ 171,757	$ 3,121,757	$ 1,021,757

PROJECT	YEAR 1 FY23-24	YEAR 2 FY24-25	YEAR 3 FY25-26	YEAR 4 FY26-27	YEAR 5 FY27-28
OHM Capital Projects	$ 2,000,000	$ 2,000,000			
NEW WELL / PUMP / RESERVOIR	$ 100,000	$ 2,200,000			
NEW WELL / PUMP / RESERVOIR			$ -	$ 2,000,000	
WATER MAIN (Rd 1 E from Fletcher Ct to Rd 3 S)			$ 100,000	$ 1,000,000	
WATER MAIN (TBD)				$ 100,000	$ 1,000,000
NEW FILL STATION	$ 100,000				
TOTAL PROJECT COSTS:	$ 2,200,000	$ 4,200,000	$ 100,000	$ 3,100,000	$ 1,000,000
ENDING FUND BALANCE:	$ 71,757	$ 121,757	$ 71,757	$ 21,757	$ 21,757

Example CIP - Sewer

FUNDING SOURCE	YEAR 1 FY23-24	YEAR 2 FY24-25	YEAR 3 FY25-26	YEAR 4 FY26-27	YEAR 5 FY27-28
Beginning Fund Balance	$ 351,922	$ 326,922	$ 521,922	$ 21,922	$ 21,922
Transfers In From Sewer Enterprise Fund	$ -	$ -			
WIFA LOAN	$ 1,000,000	$ 13,500,000		$ 1,250,000	
One East Sewer - CSLFRF	$ 1,659,000				
TOTAL AVAILABLE FUNDS:	**$ 3,010,922**	**$ 13,826,922**	**$ 521,922**	**$ 1,271,922**	**$ 21,922**

PROJECT	YEAR 1 FY23-24	YEAR 2 FY24-25	YEAR 3 FY25-26	YEAR 4 FY26-27	YEAR 5 FY27-28
COLLECTION SYSTEM I&I SURVEY	$ 125,000				
New Building aprons and fence		$ 55,000			
PAVING DRIVEWAY					
CONSTRUCT LIFT STATION ROAD			$ -		
Drying Beds		$ 250,000			
MBR Filters			$ 500,000	$ 250,000	
One East Sewer Line - CSLFRF	$ 1,659,000				
Plant Expansion (MBR Basin's)	$ 900,000	$ 13,000,000			
12" sewer main on Rd 1 E from Fletcher Ct to Rd 3 S				$ 1,000,000	
SEWER MAIN (TBD)					$ 2,000,000
TOTAL PROJECT COSTS:	**$ 2,684,000**	**$ 13,305,000**	**$ 500,000**	**$ 1,250,000**	**$ 2,000,000**
Ending Fund Balance	**$ 326,922**	**$ 521,922**	**$ 21,922**	**$ 21,922**	**$(1,978,078)**

Capital Improvement Plan - Facilities & Parks

- There is no defined CIP for Facilities and Parks as of yet. Future Projects include
  - Roof Replacements at the Library and other Buildings as needed
  - An annual replacement of HVAC Units
  - An annual parking lot repair program
  - A new shop building for Parks
  - Pickle Ball Courts

- Future Projects that have been informally discussed may include
  - Development at Old Home Manor
  - A Potential New Town Hall
  - A Potential Recreation Center

THANK YOU

Frank Marbury

Town Engineer / Public Works Director

EXAMPLE CIP - Streets

STREETS FIVE YEAR CIP (FY23-24 / FY27-28)

FUNDING SOURCE	YEAR 1 FY23-24	YEAR 2 FY24-25	YEAR 3 FY25-26	YEAR 4 FY26-27	YEAR 5 FY27-28
Beginning Fund Balance	$ 3,280,249	$ 4,480,249	$ 3,680,249	$ -	$ -
Transfers from General Fund	$ 2,500,000	$ 500,000	$ (2,180,249)	$ 1,500,000	$ 1,100,000
Transfers from HURF	$ 200,000	$ 200,000			
TOTAL AVAILABLE FUNDS:	**$ 5,980,249**	**$ 5,180,249**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**

PROJECT	YEAR 1 FY23-24	YEAR 2 FY24-25	YEAR 3 FY25-26	YEAR 4 FY26-27	YEAR 5 FY27-28	YEAR 6 FY28-29	YEAR 7 FY29-30	YEAR 8 FY30-31	YEAR 9 FY31-32	YEAR 10 FY32-33	YEAR 11 FY33-34
E ROAD 2 EAST RECONSTRUCTION: 0.5 Miles *(Overlay)*	$ 200,000										
N ROAD 1 EAST RECONSTRUCTION: 1 Mile	$ 1,200,000										
N REED ROAD RECONSTRUCTION: 1.5 Miles	$ 100,000	$ 1,400,000									
E PERKINSVILLE ROAD RECONSTRUCTION: 2.25 miles, 24' wide		$ 100,000	$ 1,400,000								
E PERKINSVILLE ROAD RECONSTRUCTION: Complete remainder of project			$ 100,000	$ 1,400,000							
W ROAD 4 NORTH RECONSTRUCTION: 0.9 Miles				$ 100,000	$ 900,000						
CHINO MEADOWS 1 PHASE 1					$ 600,000	$ 1,400,000					
ROAD 1 WEST RECONSTRUCTION: 1.5 Miles						$ 100,000	$ 1,400,000				
CENTER STREET WITH POLES 1.1 Miles							$ 100,000	$ 1,400,000			
CHINO MEADOWS 1 PHASE 2								$ 100,000	$ 2,000,000		
E. ROAD 4 NORTH with ROW: 0.75 Miles									$ 100,000	$ 1,400,000	
OUTER LOOP and OLD HWY 89 *(Overlay)*										$ 100,000	$ 1,900,000
TOTAL PROJECT COSTS:	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 2,100,000**	**$ 1,500,000**	**$ 1,900,000**
ENDING FUND BALANCE:	**$ 4,480,249**	**$ 3,680,249**	**$ -**	**$ -**	**$ -**						