

Keys to Success: Water Recycling in Tribal Communities

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Training Overview



- National Water Reuse Action Plan
- Why should tribes recycle water?
- Recycled wastewater & stormwater uses
- Case Study: San Pasqual Band of Mission Indians
- Keys to developing safe recycling
- Tribal support needs?



National Water Reuse Action Plan 2020

- Help partners pursue safe water reuse.
- Ensure sustainability, security, and resilience.
- Encourage integrated water management.
- 37 actions with implementation plans.



WRAP Action 2.2.15:

Conduct Outreach and Training with Tribes to Build Water Reuse Capacity

- Ask Tribes about reuse interests/experiences
- Introductory training for Tribes July 2020
- Assess needs for support to advance safe reuse

Why Bother to Recycle Water?

- Wastewater and stormwater are valuable
- Make limited local supplies go farther
- Diverse supply builds redundancy/resilience
- Greater control over water quality
- Stormwater capture helps flood control

Uses for Recycled Water

- **Community:** parks, landscaping, golf courses, dust control
- **Agriculture:** food crops, non-food crops, livestock watering
- **Impoundments:** recreational water bodies, landscape features
- **Environment:** wetlands, stream flow augmentation
- **Groundwater recharge:** salinity barriers, potable use, aquifer stability
- **Drinking water:** augment surface supplies
- **Industry:** cooling, boiler water, oil/gas production, food processing

Recycled Water for Dust Suppression

- **Tule River Reservation, CA**
 - Wastewater plant upgrade 2009
 - Enables disconnection of failing septic tanks
- **Recycling Solution**
 - Use treated effluent for dust suppression on roads





Reclaimed wastewater used for gardens, toilets & firefighting

- **Santa Ynez Chumash Tribe, CA**
 - Needs water for new casino; supply limited
- **Water Reuse Solution:**
 - Treat wastewater for toilet flushing, cooling tower, and landscape irrigation.
 - Membrane-based facility treats 67,000 gpd
 - Also used for fighting wildfires.



Onsite Nonpotable Reuse

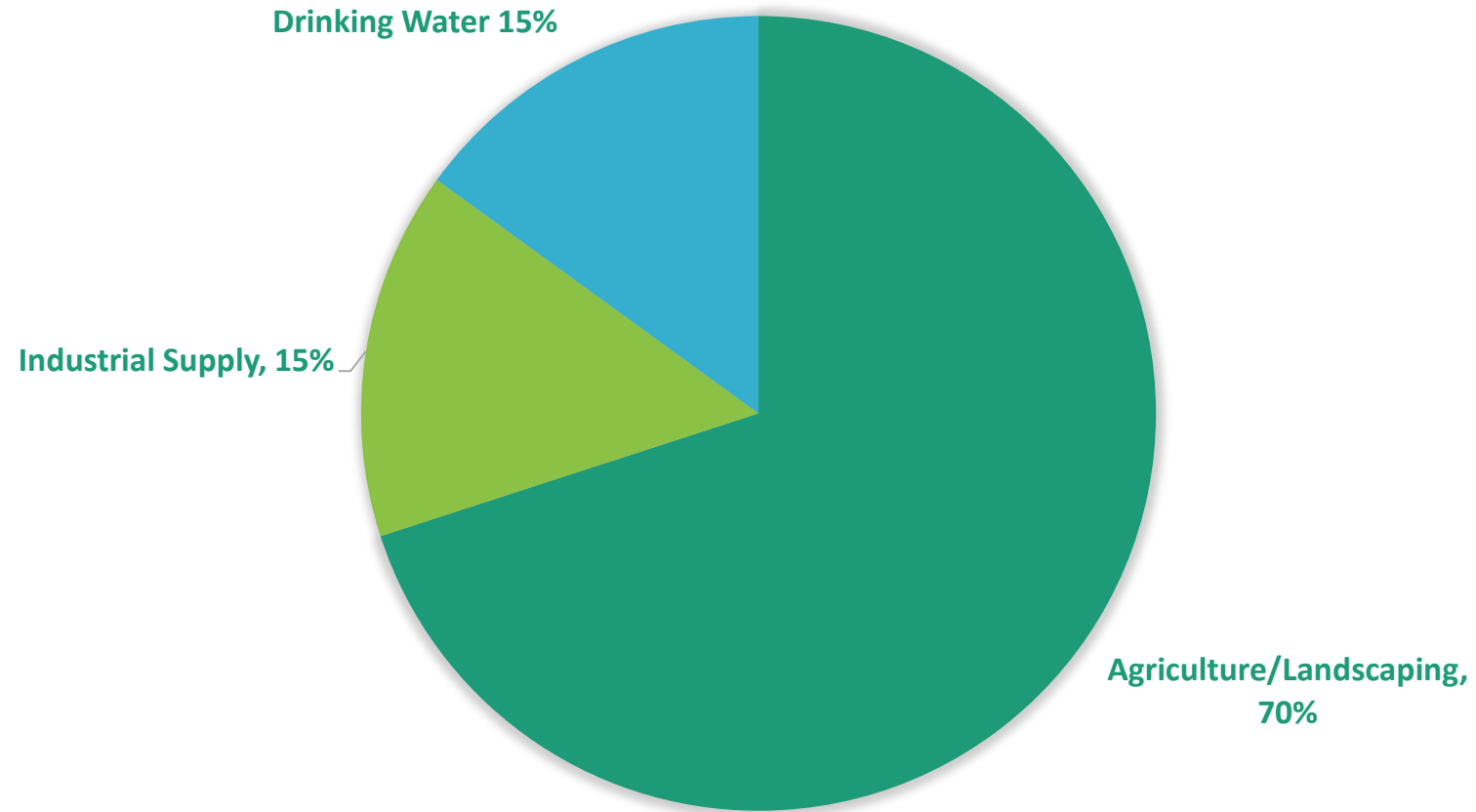
- Recycle water at home or building scale
- Capture and treat:
 - Greywater- wash water from washing clothes, dishes, or people
 - Rainwater/Stormwater- water from rooftops or around buildings
 - Condensate from cooling systems
 - Blackwater- sewage (not advised for most)
- Onsite treatment for use (filtration, disinfection)
- Onsite reuse:
 - irrigation
 - toilet flushing
 - cooling



Courtesy of Bernalillo County, NM

Bottom Line: Water Recycling in the US

Only about 3% of US wastewater is reused



Recycling for Your Tribe?

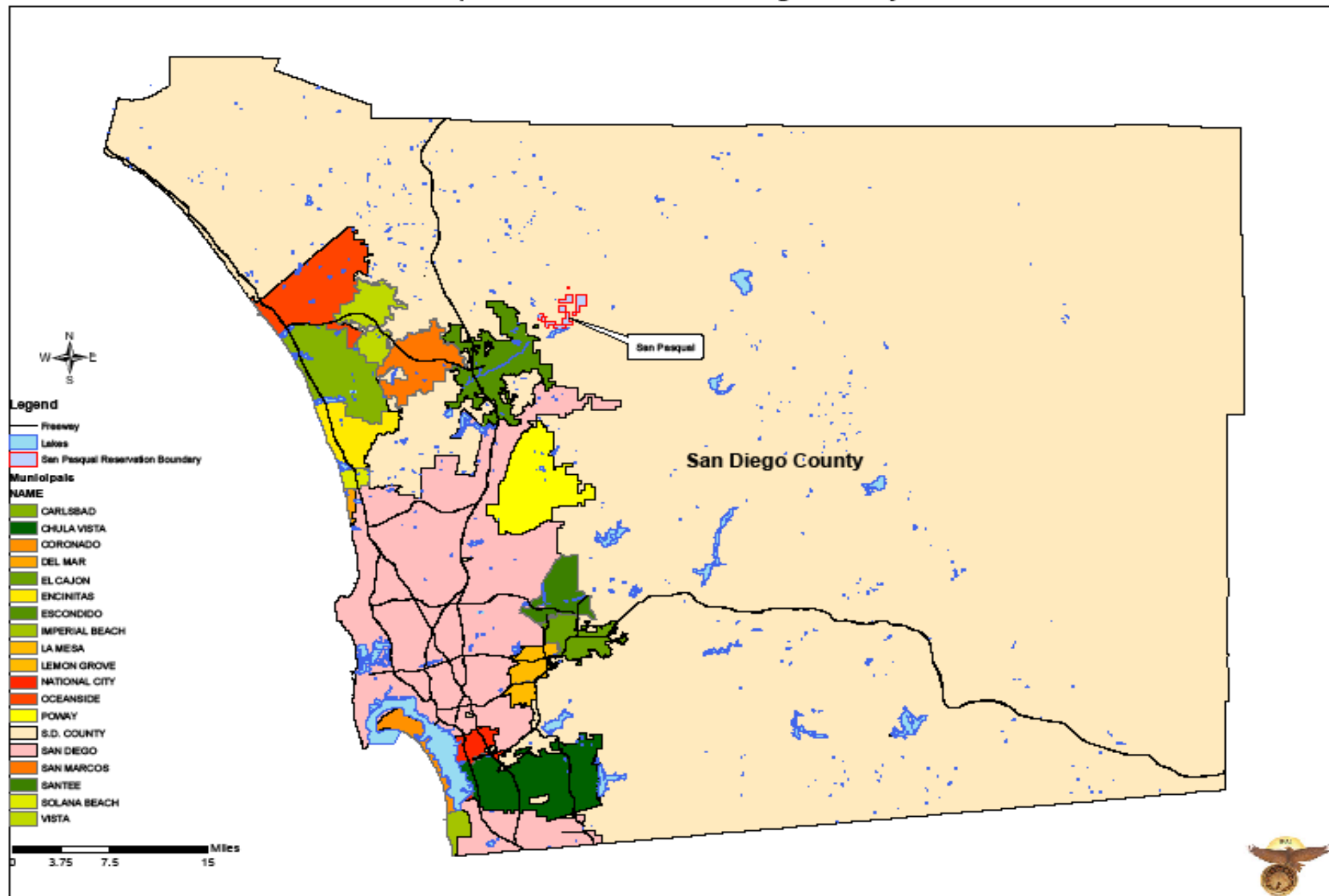
- Big opportunities
- Many tribal/non-tribal communities already successful
- Need to be ready:
 - technical, financial, and operational skills and resources
- We can learn from others
- Lots of available tools and resources

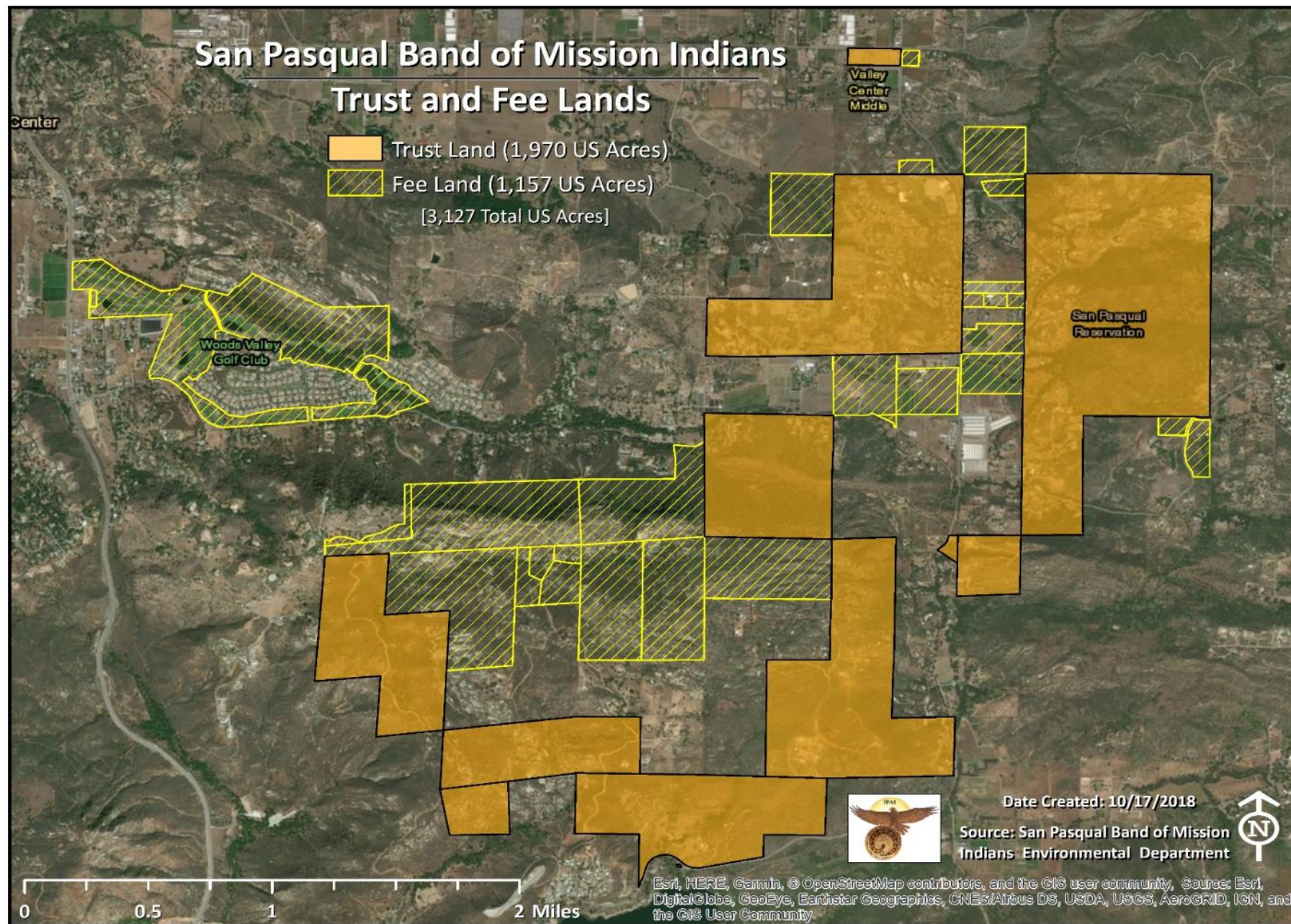


San Pasqual Reclaimed Water & Water Conservation Projects



San Pasqual in Relation to San Diego County & Cities







Water Conservation Efforts at San Pasqual

San Pasqual: Water Insecure

- Entire reservation is water insecure (esp. District A)
- Relies too much on Valley Center MWD supply
- Water supply at risk due to:
 - Climate change
 - Population growth
 - Invasive plants
 - Water waste
 - Water leaks



What is the solution!?!?

- Rain Water Barrels
- Water Efficiency Efforts
- Technology – Smart Water Meters
- Educational Outreach
 - Promote native/drought resistant plants
 - Monthly newsletter
- Recycle reclaimed water from Casino



Rain Barrel Program

- Funded by 2019 EPA 319 Nonpoint Source Grant
- Installed 38 rain barrels for 19 residents
- Each rain barrel has a 75 gallon capacity
- Helps water landscaping at homes



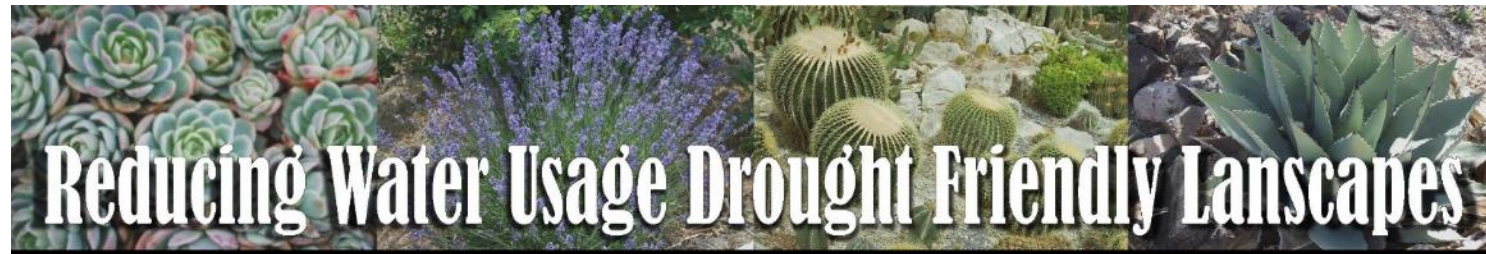
Water Efficiency Efforts

- High efficiency shower heads at no cost to home owners
- Reading meters – helps identify leaks
- Aggressively finding and fixing leaks
- Transition to smart meters



Monthly Newsletters

Educate and provide environmental updates to community



Reducing Water Usage Drought Friendly Landscapes

During the past year San Pasqual's Environmental and Water Departments have promoted different ways to reduce water usage in and around your home. Throughout the year we have seen a great response, many homeowners have taken advantage and put to use the free faucet aerators and shower heads provided by SDG&E. But during California's current drought status and with Governor Brown directing the statewide mandatory water reduction we as a community need to continue in our efforts to reduce daily water usage.

There are many great websites with helpful tips and examples on how Californians are saving water such as;

www.saveourwater.com

www.socalwatersmart.com

www.wateruseitwisely.com

www.watersmartcheckup.org

On top of the water reduction information some websites have information on Water Smart Landscaping.

www.landscapemakeover.watersmartsd.org

Provides information on upcoming classes that provide instruction from industry professionals, that will educate you on how to develop a landscape makeover plan that works for your yard and climate.

A large part of water reduction efforts are now focused on landscapes and many cities including Valley Center now have mandatory reductions on irrigation. A fun way you can start saving on water usage would be to take out some of your water dependent grass and plants and creating a drought friendly landscape by using California native plants.

Many of the Native plants on our reservation are drought tolerant and have adapted to the dry climate and tuff soil we have so they are perfect to start your drought friendly landscape. Now I'm not saying to let the weeds grow wild but rather to use our natural resources in a manner that fits you. Using the same native plants and resources around your home design your landscape around your family.

Pathways and patio areas can be made out of River Rock, Flagstone, Gravel, Boulders or sitting wall blocks instead of grass. In areas were the kids play that we usually prefer grass in maybe try wood chips or artificial turf.

A few colorful and attractive native plants:

- Lavender
- Sage
- Agave
- Small succulents
- Acorus
- Liriope
- Rosemary Tuscan Blue
- Mexican Feather Grass
- Date Palm
- Golden Shrub Daisy

Install rain barrels with drip irrigation to the plants and areas that need the most water, such as gardens.

Creating a native friendly landscape will not only be relaxing and visually pleasing but water friendly. It will reduce your usage significantly and save water for the important things in your life.



SDG&E

Saving Water



Kumeyaay Environmental Times

VOLUME 4 ISSUE NO. 5

The Environmental & Domestic Water Department

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- Melissa Morales, Environmental Coordinator at 760-651-5143
melissam@sanpasqualtribe.org
- Roland Escarcega, Water Master
- Louie Morales, Water Technician

If you suspect a water or septic leak or would like to have your septic mapped please do not hesitate to call the Environmental Department so we can come and inspect.

Transfer Station Hours

Monday - Friday
7:30 am - 2:30 pm
CLOSED Weekends & Holidays

MUST SIGN IN BEFORE DROP OFFS

For information or to schedule an elder pick-up contact
Desiree Morales-Whitman
at 760-651-5142



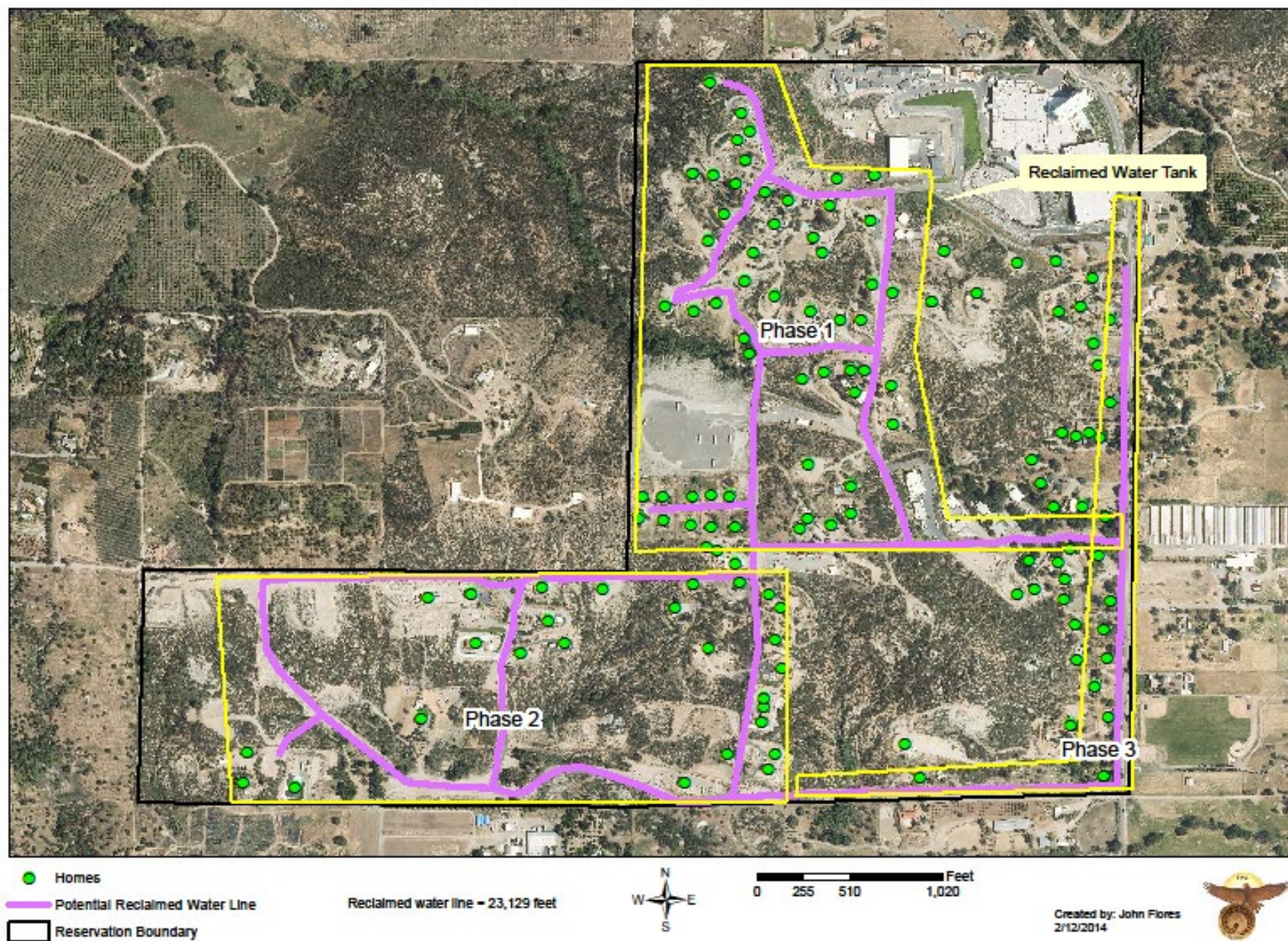
San Pasqual Reclaimed Water Project

Multiple Project Partners and Funders

- **San Pasqual Tribal Government**
- **Rural Community Assistance Corporation**
 - Integrated Regional Water Management Plan funding process
- **Bureau of Indian Affairs**
 - \$50,000 Tribal Water Resources Grant for project planning, engineering, survey work
- **San Diego Integrated Regional Water Management and California Department of Water Resources**
 - \$650,000 grant from CA Proposition 84
- **Valley View Casino**
 - Provides highly treated reclaimed water



Potential Reclaimed Water Line Route - District B



Reclaimed Water Treatment

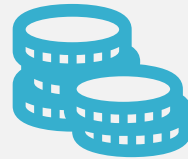
- Casino wastewater treatment makes water safe for irrigation
- Produces 30,000 gal. per day of excess reclaimed water for use
- Primary and Secondary treatment
- Microfiltration
- Extra disinfection and holding time
- Treat to California treatment standards



Reclaimed Water Fees



Monthly flat fee of \$12 a month



One time connection fee of \$250



Irrigating with Reclaimed Water

- All homeowner installed irrigation systems reviewed/approved by San Pasqual Water Department
- Will only approve drip, bubblers or subsurface irrigation
- All irrigation lines must be purple or painted purple for identification
- Hose bibs allowed case by case
- “Reclaimed Water” signage

Allowable vs Unallowable Uses

Allowable Use

- Non food-bearing trees
- Landscape impoundments without decorative fountains
- Fire fighting

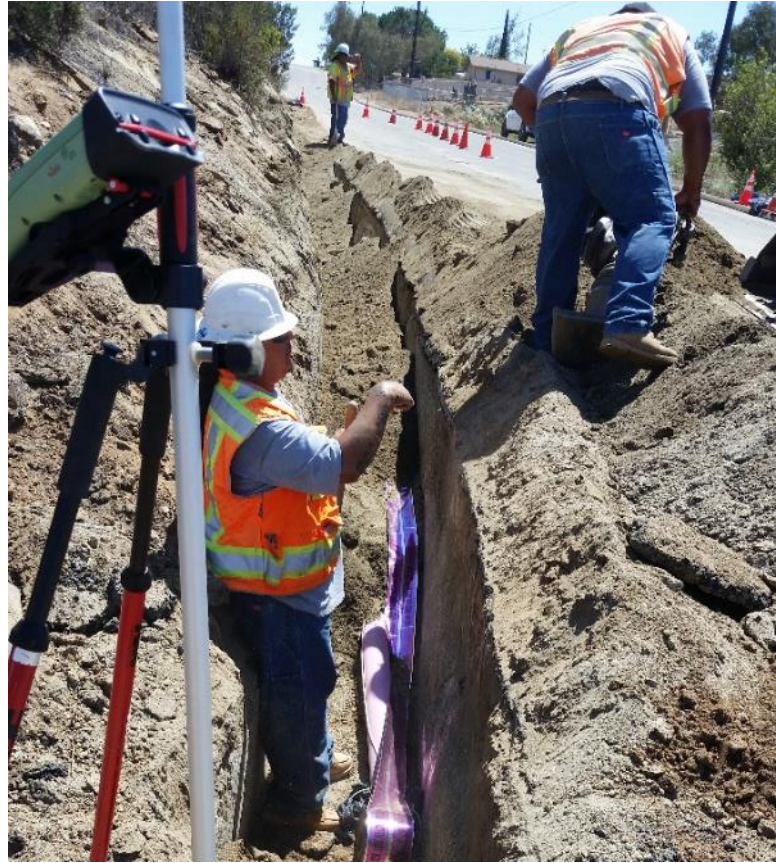
Unallowable Use

- Food crops where recycled water contacts the edible portion of the crop, including all root crops
- You can't wash your car
- YOU CANNOT DRINK, SHOWER, OR WASH IN IT

Benefits

- Conserves potable water – no waste on landscapes and yards
- Financial benefit for homeowners
- Water source for construction, soil compaction & dust control
- Fire suppression water source
 - New purple hydrants





Reclaimed Water Line Installation



Opening Ceremony

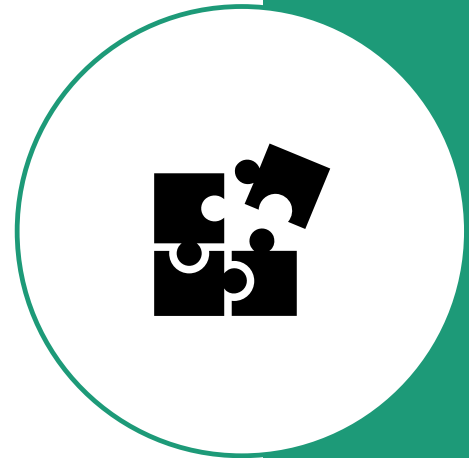
Keys To Success

- **Leadership**
 - Need a dedicated project advocate
- **Partnerships**
 - Effective work with other agencies to get help to develop and fund the project
 - Help is available!
- **Outreach To Tribal Members and Leaders**
 - Teach people about water scarcity, wise water use, and safety of using reclaimed water



How to Do Recycling: Assembling the Parts

- Water sources
- Technologies for wastewater and stormwater recycling
- Regulatory frameworks
- Operational needs
- Public acceptance
- Financing




Starting Points: Wastewater

- Need a centralized source of wastewater
 - Wastewater treatment plant
 - Multi-family septic system
 - Other large volume source (casino, factory)
- Need space for treatment, ability to distribute
- Need resources to:
 - Build treatment and distribution facilities
 - Staff and maintain facilities
 - Work with your customers and community members



Starting Points: Stormwater

- Need locations where stormwater can be captured
 - Developed areas with impervious surfaces (roofs, parking lots)
 - Need room to capture and store
 - Ideally over a groundwater aquifer or near where water is needed (e.g., near landscaped area needing irrigation)
 - Need resources to build, staff and maintain facilities
- 

How Much Treatment Do You Need?

- Depends on intended use
 - Most non-potable uses just need to kill microorganisms
 - Potable reuse requires much more treatment
- Traditional wastewater treatment removes most metals and organic compounds
- Tertiary filtration and disinfection kills most microorganisms
- Advanced treatment can pretty much get rid of everything else
- Similar approaches apply to stormwater, depending on source

Federal Regulatory Requirements for Water Recycling

- No direct requirements governing recycling
- Clean Water Act NPDES permits for wastewater and stormwater discharges
- Groundwater injection – Underground Injection Control (UIC) permitting
- For potable reuse, Safe Drinking Water Act
 - Filtration
 - Disinfection
 - MCLs



State Regulatory Requirements Should Be Considered

- Most are specific to the end use
- Most are progressively stringent
 - Low risk (non-edible crops, trees)
 - Medium risk (parks, edible crops)
 - High risk (drinking water)
- Increased disinfection and toxic chemical removal required
- States aquifer recharge requirements could affect infiltration/injection

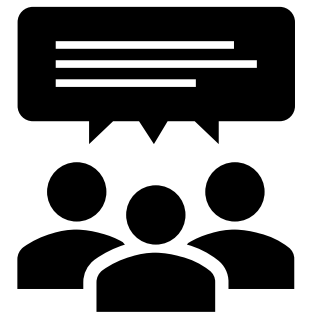
How to Build Capacity to Recycle

- Consider all water infrastructure needs
- Build community/leader support
- Determine treatment needs
- Plan with the regulators
- Identify durable funding plan to cover construction and O&M costs
- Obtain needed operator training

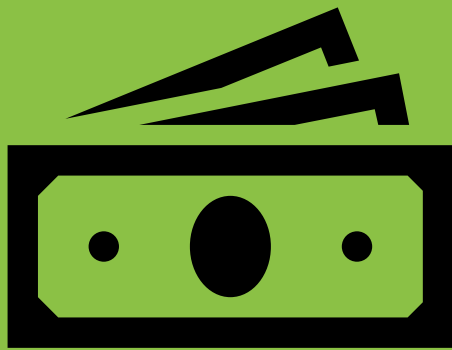


Build Community Support

- Essential to gain public and leader trust early in process:
 - That recycled water is necessary
 - That recycled water is safe
 - That you are capable of doing this well
- Be transparent, include the public in planning



Paying for Reuse



- Many funding sources available
- Grants and loans have pros and cons
- Some local funding needed
 - match grants
 - repay loans
 - operations and maintenance
- Federal sources
 - EPA
 - USDA
 - IHS
 - Bureau of Reclamation
 - FEMA



Questions to Ask Yourself

- Do we need more water?
- Do we have other important reasons to do this?
- Do we have wastewater/stormwater available for reuse?
- Do we have technical, financial, managerial capacity?
- Do we have a treatment location, distribution capacity?
- Will our customers and decision-makers be ok with this?
- Can we provide safe, recycled water?



What Help Do You Need?

- Project assessment and planning
- Technical training
- Financial planning and support
- Regulatory assistance
- Communications/public outreach
- Other areas?



Questions
and
Comments?



Thank you!

