

**WaterSMART Grant:
Small-Scale Water Efficiency
Project
BOR-DO-20-F006**

Project 1

**Installation of Rubicon Gate
(8 Foot)
At Gila Bend Main Canal**

Technical Proposal

for a

WaterSMART Grant:

Small-Scale Water Efficiency Project

BOR-DO-20-F006

Project 1

Installation of Rubicon Gate (8 Foot)

At Gila Bend Main Canal

Submitted To:

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Appendix A:

Rubicon Water Scoping Study
Paloma Irrigation and Drainage District
Rubicon Systems Australia Pty Ltd
May 2018

1. Technical Proposal and Evaluation Criteria

1.1 Executive Summary

This application is being submitted on 04/03/2020 by:

Paloma Irrigation and Drainage District
38401 W. I-8 # 175
Gila Bend, AZ 85337, Maricopa County

The Paloma Irrigation and Drainage District (PIDD) canal system has operated for over 100 years using manual controls to deliver water to their water users. This system is inefficient and prone to uncontrolled releases, spills, overflows, and requires constant overwatch and maintenance. Especially because we rely on 84 wells (65%) and surface water from Gila River (25%) for our source of water. PIDD proposes to slowly upgrade our irrigation system and bring it into the 20th century. We plan to modernize our system, **one gate/structure** at a time. **This project (Project 1 of 2) is for installation of an 8 Foot Rubicon Gate, near the end of the Gila Bend Main Canal.** *Project 2 is for a 4 Foot Rubicon Gate at the end of this canal (Separate grant application).* In May of 2018, PIDD selected Rubicon Ltd to conduct a District Assessment Study for our water delivery system to develop a plan to modernize our aging infrastructure with state-of-the-art technology and their “tried and tested” Rubicon Gates. Our Consultant Engineer, GCE validated the Rubicon’s work for this application and a copy of the study has been provided in the Appendix. Because of the high costs to upgrade and network our entire system, we will implement this project in phases, carefully leveraging funding and resources.

This is our **third Rubicon Gate installation project** and part of our overall strategy to slowly upgrade our irrigation system with real-time technology, new automated gates, and associated SCADA components. We plan to replace the manual Jacklift gate, that is inefficient and badly deteriorated, poorly functioning, and requires constant on-site monitoring and maintenance with a new automated “Rubicon Flume Gate” in the 34 mile-long Gila Bend Main Canal.

We will accomplish the goals established for the WaterSMART program by leveraging funding to conserve and better manage our water resources and increase efficiency of our system by slowly creating an integrated network of automated Rubicon gates, improve operational storage, and improve management of mismatched flows and water quality. We plan to complete the project in a **four-week period** and installation can begin in the late winter anytime between February and March, depending upon the NTP. Since the primary use of the water is agricultural, this is the best time because there is less demand, thus minimal impact to our producers/growers. We will schedule our work to accommodate them.

This project is **not** located on a Federal facility. The PIDD canal system was the largest privately funded irrigation project in Arizona history, costing private owners about \$2 million in 1919. Later in 1920, Frank Gillespie, a local rancher built the 1,700 LF Gillespie Dam to help provide water for irrigation. This community has practiced self-reliance for many decades, but now with the high costs of improvements, water shortfalls, water quality challenges and increased operating costs, we must seek ways to leverage funding from grants or develop creative strategies to continue to provide our much needed services for this area.

1. Technical Proposal and Evaluation Criteria

1.2 Background Data

The Paloma Irrigation and Drainage District (PIDD) claims water rights on the Gila River dating back to the late 1800s and annually diverts an average of 185,000 Acre-Feet/Year for 27,000 acres. The District canal system was the largest privately funded irrigation project in Arizona history, costing private owners about \$2 million in 1919. It was formally recognized as the Paloma Irrigation and Drainage District by Maricopa County in May of 2001. PIDD lies in the vicinity of Gila Bend, Arizona, with its diversion point on the Gila River being about 25 miles south of the confluence of the Gila River and Hassayampa River. It is downstream of the Aqua Fria River and the Salt River. Return water flows back into Bull Durham Wash, which is tributary to the Gila River. The most important crops grown in our district are Alfalfa, Corn, Cotton, Sorghum, Millet, Milo and other small grains. Crops can be grown year-round in this warm dry climate with little need for frost protection.

Currently, the Paloma Irrigation and Drainage District operates and maintains 99 miles of irrigation ditches and canals; 100% are lined with concrete. The canal liner condition and operational reservoirs are deficiencies to be addressed by PIDD. PIDD has the right to divert essentially all the water that arrives at Gillespie Dam on the Gila River and supplements it with water pumped from wells so that it produces approximately 185,000 acre-feet per year to irrigate approximately 27,000 acres. Efforts to conserve water are challenging in PIDD's antiquated control systems, but PIDD works closely with its Water Users, USBR and other agencies to be pro-active in addressing these issues.

Source of Water Supply:

Gila River (Gillespie Dam Lift Station 40-80 cfs) Includes Upstream Irrigation Tailwater: 25%
84 Ground Water Wells (4.5 cfs): 65%
Sumps and Pump Backs (10%)
Distributed to PIDD Canal

Total Quantity of Water Supplied: 185,000 acre-ft/yr

Quantity of Water Supplied to Gila Bend Main Canal: 165,000 acre-feet

Water Rights Involved: approx. 1881 Priority

Current Users and Number Served: Agricultural 22

Current Water Demand: 360 cfs **Projected Water Demand:** Same

Estimated Water Loss Reduction if New "Rubicon" Gate and Associated Structures installed:
150 – 250 acre-feet/year *Also significant Energy Savings – Well Pumps and Reduction in Labor Expenses*

1. Technical Proposal and Evaluation Criteria

1.2 Background Data (Continued)

Major Crops: Alfalfa, Corn, Cotton, Sorghum, Barley, Wheat and Oats

Total Acres Served: 27,000 Acres

Paloma Irrigation and Water District Water Delivery or Distribution System: Agricultural Use only.

Potential Shortfalls in Water Supply: 31,000 acre-feet/yr (Actual)

If drought continues, shortfalls quantities could increase. Increased demand from new users. Water conservation measures are critical. Farmers here have already been encouraged to implement water conservation measures. They must fallow parts of their farms each year and go on pro rata shares of the available water in the summer months.

Type and Approximate Total Lengths of Canals, Laterals and Pipes: 99 Miles

Concrete Lined/Pipe: 99 Miles (100%) **Unlined:** 0 Miles

Type and Approximate Total Lengths of Canals: 34 Miles

Concrete Lined: 34 Miles (100%) **Unlined:** 0 Miles

Type and Approximate Total Lengths of Laterals: 65 Miles

Concrete Lined: 65 Miles **Unlined:** 0 Miles

Fragmented/Deteriorated Concrete Lined Lateral: Approximately 20 Miles

Type and Approximate Total Lengths of Pipes: To be finalized

Number of Irrigation Turnouts: 166

Significant Irrigation Improvements:

Automated Controls Structures: 2 Rubicon Automated Gates (Enterprise Turnout and Sump 4 Measuring Water Losses) **SCADA:** 0

Remote Monitoring Devices: 8/84 Wells recently placed on remote controlled and monitoring (Crop Link by Agsense).

PIDD has developed a great partnership with our water users to use irrigation methods that promote water use reduction (sprinklers, drip, etc.) and crops that require less water. They actively participate in water conservation methods because not only is it good for our water resources, it provides them a cost savings.

1. Technical Proposal and Evaluation Criteria

1.2 Background Data (Continued)

The Paloma Irrigation and Water District (PIDD) has operated for over 100 years using manual controls to deliver water to their water users. This system is inefficient and prone to uncontrolled releases, spills, overflows, and requires constant overwatch and maintenance. Especially because we rely on both well water (65%) and surface water (25%) for our water supply. PIDD proposes to slowly upgrade their irrigation system and bring it into the 20th century. We plan to modernize our system, **one gate/structure** at a time. This project is for installation of an 8 Foot Rubicon Gate, located within the last two miles of the Gila Bend Main Canal. In May of 2018, PIDD selected Rubicon Systems Australia Pty Ltd to conduct a District Assessment Study for our water delivery system to help us develop a plan to modernize our aging infrastructure with state-of-the-art technology and their "tried and tested" Rubicon Gates. The base cost estimate for upgrading just our lateral gates is around \$2.8 million; not including turnout gates, installation or commissioning and inspection or contingencies. A copy of the Rubicon Scoping Study has been provided in the Appendix. Because of these high costs, we will implement this in phases, carefully creating an integrated network of automated Rubicon gates and SCADA controlled operations. This is our first application to USBR to help us leverage funding and resources and we have chosen to begin with this Small-Scale Water Efficiency Grant.

This is our **third Rubicon Gate installation project** and part of our overall strategy to slowly upgrade our irrigation system with real-time technology, new automated gates, and associated SCADA components. We plan to replace the manual Jacklift gate, that is badly deteriorated, poorly functioning and requires constant on-site monitoring and maintenance with a new "Rubicon Flume Gate" with Network controls in the 34 mile-long Gila Bend Main Canal. This flume gate will be located near the end of this canal (within last two miles).

We will accomplish the goals established for the WaterSMART program by leveraging funding to conserve and better manage our water resources and increase efficiency of our system

1.3 Project Location

Gila Bend Main Canal (within last 2 miles)

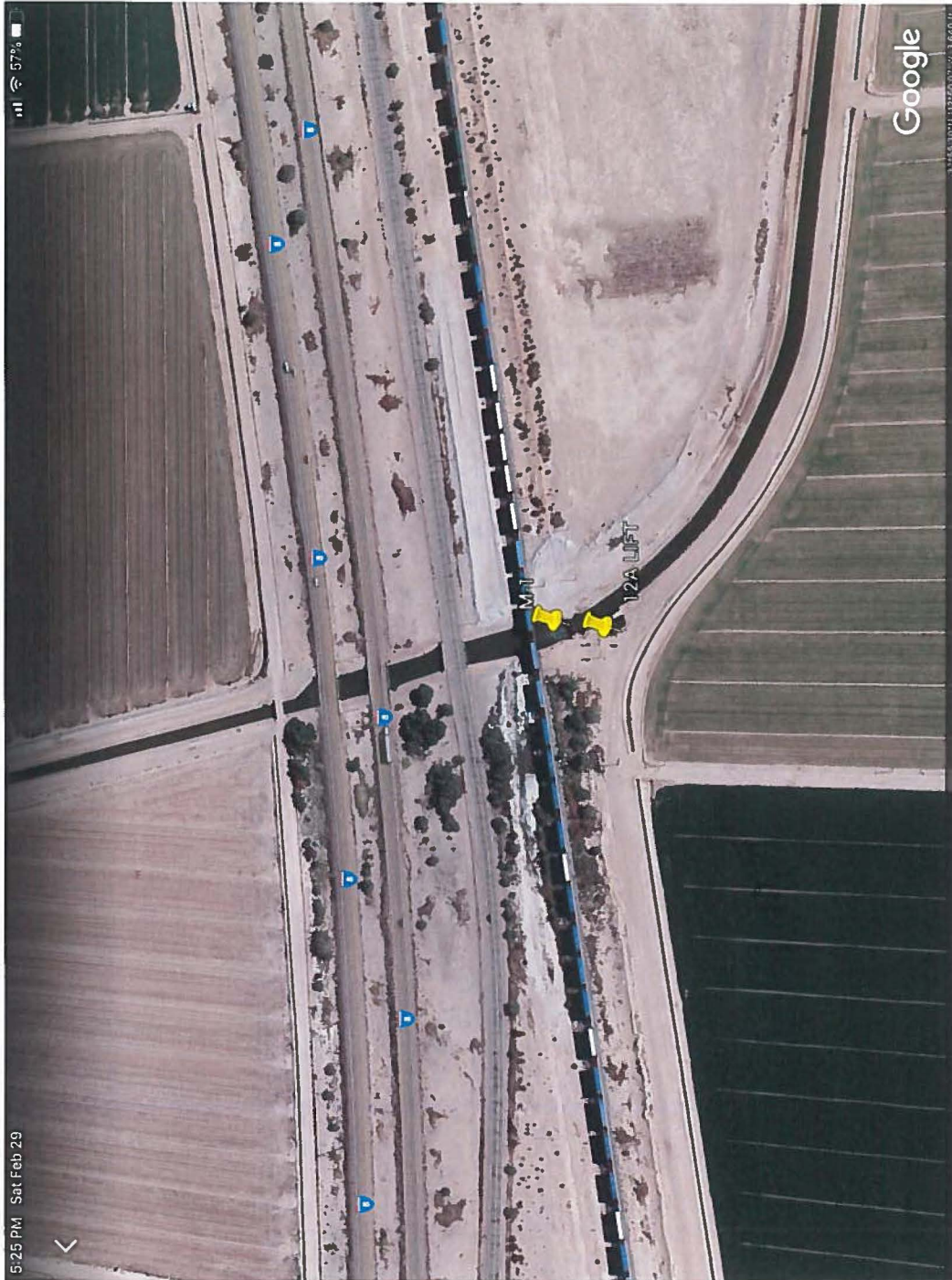
Within the historical boundaries of Gila Bend and Buckeye, about 25 miles south of the confluence of the Gila River and Hassayampa River. It is downstream of the Aqua Fria River and the Salt River.

Latitude: 32° 55' 36.9" N Longitude: 112° 50' 07.1" W

A map has been provided on the following page.

1. Technical Proposal and Evaluation Criteria

1.3 Project Location (Continued)



M1 = Location of Rubicon 8 Foot Gate

1. Technical Proposal and Evaluation Criteria

1.4 Technical Project Description and Milestones

Problems and Needs:

PIDD's existing water delivery system faces many challenges due to its distance from traditional surface water sources, almost 65% of its water must come from 84 ground water wells. Another 25% is pumped from the Gillespie Dam (Gila River, 25 miles South) and includes irrigation tailwater from upstream. Without automation and integrated controls, it is difficult to precisely match water supply with demand to provide operational flexibility and prevent excess flows and minimize operational spills.

The problems PIDD faces is two-fold:

- 1) Costs from running the pumps and excess water loss from operational overflows and spillage.
- 2) Lack of effective water conservation measures: volume/flow controls (automation) and structures (gates) to manage in-channel storage and precisely match supply and demand.

Project Specific Problems (Matched to Project Specific Expected Outcomes Page 8)

1. High Pumping and Energy Costs (More funding available for improvements)
2. Large operational losses from spills and overflows, and imprecise measuring (22,200 acre-foot/year)
3. High manual operating costs and use of resources
4. Frequent water level fluctuations
5. Lack of capability to provide on-demand water delivery to customers
6. Lack of capability to provide remote monitoring and operation to PIDD
7. No ability to identify leaks and seepage and unauthorized usage by utilizing the precise flow rate measurement provided by the upgraded gate regulator (Timely preventative actions)
8. Unable to provide full integration between flow regulation gate structure and groundwater pumps
9. Unable to provide constant supply levels to maintain more constant flow rates through turnouts to improve levels of service to water users. Current fluctuations can range from 0.5 to 2.0 Ft.
10. Five to Twenty-Four Hr "Order On" Lead Times to allow water delivery to be more precisely timed to crop needs
11. Five Hr Reduced "Order Off" lead Times to allow precise volumes to be applied to
12. Little or no collaboration between multiple users and PIDD with automated water ordering
13. No irrigation decision support tools to use, such as on-line scheduling applications and digital monitoring of water usage and flow levels for water users (Efficient, timely and convenient)

1. Technical Proposal and Evaluation Criteria

1.4 Technical Project Description and Milestones (Continued)

14. Unable to precisely match water supply to crop demand in order to irrigate each crop with the required amount of water.
15. Irrigation water management for water quality

How Problems and Needs will be Addressed:

To address this problem, in May of 2018, PIDD selected Rubicon Systems Australia Pty Ltd to conduct a Scoping Study for our water delivery system to help us develop a plan to modernize our aging infrastructure with state-of-the-art technology and their "tried and tested" Rubicon Gates. The base cost estimate for upgrading just our lateral gates is around \$2.8 million; not including turnout gates, installation or commissioning. A copy of this report has been provided in the Appendix.

This cost is quite prohibitive unless we do it in phases. In addition, implementation of modernization is best accomplished in phases. We are fortunate, that all our canals are already lined with concrete, so to improve the overall efficiency and effectiveness of our water delivery system, we plan to install two – three Rubicon Flume gates with automated control units per year. We have already installed two such units: Enterprise Turnout (2019) and Sump 4 for Measuring Water Losses (2019). This is our first grant application submitted to USBR to help us leverage funding and resources. We are committed to working together to create eventually creating an integrated network of automated controls for improved operations. We have also recently placed 8/84 Wells on remote controlled and monitoring (Crop Link by Agsense).

The Rubicon Water Network system (and components) have been selected rather than the traditional manual gates because it provides better water management by controlling the multiple parameters (Well Pumps, Gates/Distance from source) needed to optimize our water delivery systems. This system is critically needed to better manage this water delivery system by providing real-time monitoring and the automated responsive controls, that are currently non-existent.

Expected Outcomes:

This new Rubicon flume gate will significantly reduce operating costs and the quantity of water lost (approximately 150 - 250 acre-feet/year from spills and overflows (based on type of crop and growth cycle, irrigation distribution method, and frequency and length of water delivery). Other ancillary water distribution losses, such as seepage, evaporation will also decrease and improve on-farm irrigation water management.

1. Technical Proposal and Evaluation Criteria

1.4 Technical Project Description and Milestones (Continued)

WaterSMART Goals and Outcomes:

- 1) Preventing possible water-related crisis (shortfalls or flooding) – creating resiliency
- 2) Leveraging funding to conserve and better manage our water resources and increase efficiency of our system.
- 3) Improving water conservation, efficiency and effectiveness of water delivery system.

Project Specific Expected Outcomes:

- 1) Reduction of Pumping and Energy Costs (More funding available for improvements)
- 2) Reduction of operational losses from spills and overflows (150-250 acre-feet/year)
- 3) Reduction of manual operating costs and use of resources (More funding and resources available for improvements)
- 4) Reduction of water level fluctuations (Less water needed with optimum elevation/flow)
- 5) Enhanced capability to provide on-demand water delivery to customers (Efficiency)
- 6) Enhanced capability to provide remote monitoring and operation to PIDD staff (Better resource/staff management)
- 7) Ability to identify leaks and seepage and unauthorized usage by utilizing the precise flow rate measurement provided by the upgraded gate regulator (Timely preventative actions)
- 8) Provide full integration between flow regulation gate structure and groundwater pumps (Accurate water quantity delivery – no excess)
- 9) Provide constant supply levels to maintain more constant flow rates through turnouts to improve levels of service to water users (Less water needed with optimum elevation/flow)
- 10) Reduced “Order On” Lead Times to allow water delivery to be more precisely timed to crop needs (Less water needed)
- 11) Reduced “Order Off” Lead Times to allow precise volumes to be applied to farm (Less water)
- 12) Provide improved collaboration between multiple users and PIDD with automated water ordering (More efficient use of delivery system, less water needed)
- 13) Provide irrigation decision support tools to, such as on-line scheduling applications and digital monitoring of water usage and flow levels for water users (Efficient, timely and convenient)
- 14) More precisely match water supply to crop demand in order to irrigate each crop with the required amount of water (More accurate matching of need/demand with actual water quantity needed).
- 15) Improve on-farm irrigation water management.
- 16) Protect groundwater resources for future supply.

1. Technical Proposal and Evaluation Criteria

1.4 Technical Project Description and Milestones (Continued)

Tentative Milestone/Task Schedule

Milestone/Task	Planned Start Date	Planned Completion Date
USBR Award <i>Note: can take up to 16 weeks for Rubicon to fabricate gate May order with USBR approval before NTP.</i>	10/01/20	12/01/20
USBR NTP	12/01/20	12/01/20
Pre-Construction Contractor/Vendor Procurement: Engineering/Design, Concrete and Gate with associated structures, Concrete Subcontractor	12/07/20	01/01/21
Construction/Installation Coordinate/schedule with affected water user(s) Site Preparation Concrete Structures/Foundations Gate Installation Cleanup and Debris removal	02/03/21 ¹	03/06/21 ¹
Completion Closeout/Final Report	04/01/21	06/30/21

¹ Construction and Installation will only take four weeks but will take place in the late winter between these two dates. There is less demand (quantity and time), thus minimal impact to our producers/growers. We would schedule our work to accommodate them.

Ideally, we would like to start construction in November, but unless we receive the Award and NTP in August or September from USBR, this is unlikely.

1.5 Evaluation Criteria

A. Project Benefits

Improve Water Delivery System: Efficiency, integrated control, reliable/constant flow, less water level fluctuations, quick detection/prevention of leaks or spillage, less time required for delivery (from initial request), improved coordination/collaboration with water users, improved response time for Orders (On and Off), less pump use. All contributing less water loss and decreased operating costs.

Improve Overall Reliability: Better control to prevent overflow/flooding, especially because of the multi-source water (wells and water from Gillespie dam - 34miles away). PIDD currently had an annual shortfall of 31,000 acre-feet. This could help address that, as well as helping with future adverse conditions caused by water quality, drought and climate changes.

1. Technical Proposal and Evaluation Criteria

1.5 Evaluation Criteria (Continued)

A. Project Benefits

Geographic Scope Benefits:

Positive impact to entire system by reducing significant water loss ranging from 150 to 250 acre-ft/yr (Based on type of crop and growth cycle, irrigation distribution method, and frequency and length of water delivery). Also, reduction of ground water removal by less pumping, contributing to the overall health of the surrounding fragile desert ecosystem. Positive impact to the local area by reducing overflows (which can also cause crop damage).

Collaboration and Information Sharing Among Water Districts in Region: This project demonstrates collaboration between our water district, BOR, and our agricultural users. It can be used as an example to other water managers reflecting how assessment, planning, usage, need, coupled with automation and new technology can be used to benefit a district, especially on districts relying on multiple sources of water under various conditions (distance from source, seasonal fluctuations in supply, climate change).

Local or Economic Positive Impacts/Benefits:

Agriculture – economic (less water needed, less restriction on crops types, less danger of crop damage from overflows/flooding, reduce shortfalls, less energy needed for pumps). Reduce O&M cost to PIDD so funding can be used for other deteriorating structures and sites.

Recreational – Gila River/Watershed, desert washes– Improved off roading/camping/hiking.

Environmental – Less noxious/invasive weeds, less erosion, conservation support healthier ecosystem (Native plants, habitat, native species and migratory birds). More viable washes/springs.

Food Safety – Less danger of catastrophic crop failure due better water elevation control to prevent overflows/flooding of fields with food crops.

Public Safety –Less residual flooding from overflow and spillage resulting in unsafe driving conditions and erosion of road and ditch banks.

Complementing NRCS Projects:

This project would greatly enhance our farmers ability to make “On-Farm improvements through NRCS programs, however, until PIDD can provide better controlled water delivery systems (flow rate, pressure and elevation), it is difficult for them to make these improvements. As District Manager at PIDD and a 3rd generation farmer, I have an excellent relationship with NRCS and have received funding from them. I am working with NRCS to help develop a strategy to match our improvements with “On-Farm” projects. Also, to facilitate collaboration between our farmers with USDA programs from NRCS, Rural Development and the Farm Service Agency, as well as new stand-alone programs.

1. Technical Proposal and Evaluation Criteria

1.5 Evaluation Criteria (Continued)

B. Planning Efforts Supporting the Project

This project entitled "Installation of New Rubicon Flume Gate (8 Foot)" is part of our overall goal to save water and increase efficiency. Our "Water Conservation Plan" mandates that we periodically access our water delivery system and identify problems or needs as we continue to mature and adapt to meet changing conditions as well as identifying new technologies and strategies. In May of 2018, PIDD selected Rubicon Systems Australia Pty Ltd to conduct a Scoping Study for our water delivery system to help us develop a plan to modernize our aging infrastructure with state-of-the-art technology and their "tried and tested" Rubicon Gates (Copy provided in Appendix). We have already installed two of these structures/automated systems Gates (Enterprise Turnout and Sump 4 Measuring Water Losses). We have also recently placed 8 Wells on remote controlled and monitoring (Crop Link by Agsense). Each year, we identify and prioritize our system needs and problems and projects not addressed in the previous year are added. Our criteria include:

- 1) Is the project (components) listed as a priority on our Capital Improvement Plan and Water Conservation Plan.
- 2) Can the problem or need be remedied with existing resources and funds?
- 3) What benefits will occur from the corrective action taken (water/monetary savings, efficiency, sustainability, annual maintenance, crop losses, shortfalls, acre foot savings).
- 4) Are additional resources and funds available if the existing funds are not available?

C. Project Implementation

Implementation Plan:

Once the Categorical Exclusion is completed and we receive the NTP, we will begin initial planning. An Action Plan will be developed that lists each task, scheduled interval, responsible party, comments/notes and when the activity or task is completed and by whom. A work plan will also be completed. Major phases will include:

Pre-Construction:

Subcontractor Selection and Vendor Procurement and Award for
Engineering/Design (Minimal – gate and surrounding support structures – sidewalls/apron)
Contractor: Concrete structure (Forms, attachments, support structures)
Materials/Supplies (Order Concrete and Gate Fabrication – May need 16 weeks lead time)

Construction/Installation

Project Manager/Water Master Coordinate/schedule with affected water user(s)
Mobilize Civil Work
Site Preparation by PIDD Equipment Operator
Gate Fabrication by Rubicon
Concrete Foundation (Sidewalls and aprons) by PIDD and Rubicon (Oversee)
Gate Installation (Attach to concrete structures) by PIDD

1. Technical Proposal and Evaluation Criteria

1.5 Evaluation Criteria (Continued)

C. Project Implementation (Continued)

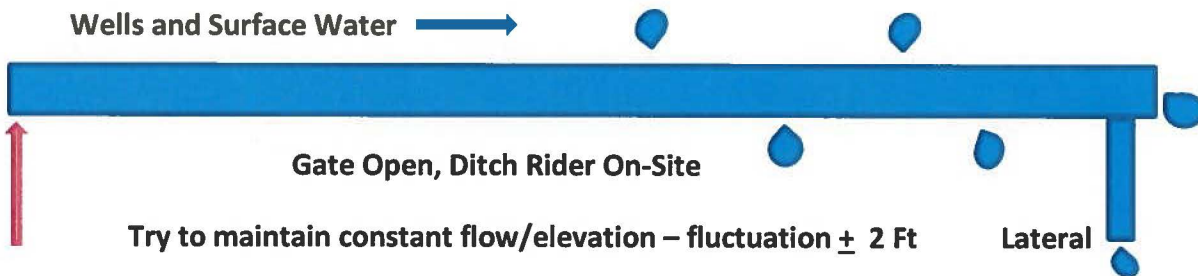
Gate Commissioning

Staff Training

Closeout/Reports

Schematic Design of Automated System Before and After:

BEFORE

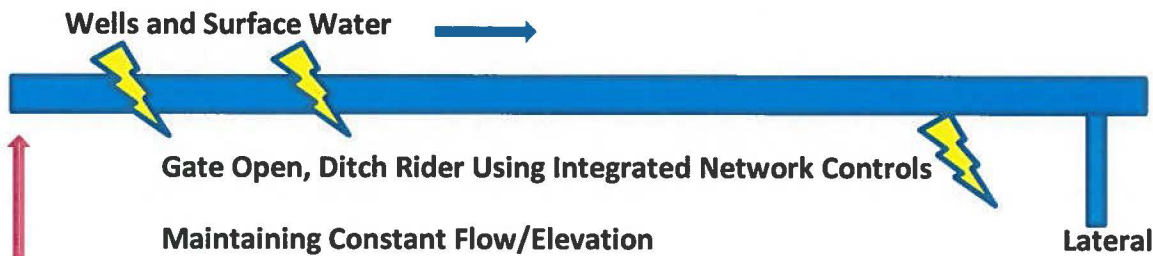


Old Gate Must anticipate when to stop pumps and close gates but still provide water needed

Stop too soon – inadequate

Stop too late – overflow/flooding or loss (downstream gates open to prevent flooding and overflow)

AFTER



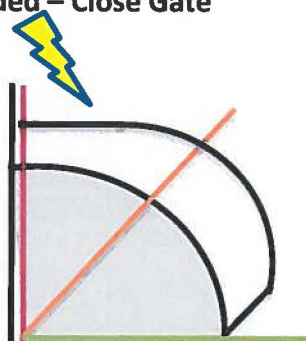
New Rubicon Gate Stop precisely when needed – Close Gate

Rubicon Gate – control elevation

Red – Closed

Yellow – Half Open

Green – Completely Open



1. Technical Proposal and Evaluation Criteria

1.5 Evaluation Criteria

C. Project Implementation (continued)

Estimated Project Schedule (Six Months):

Milestone/Task	Planned Start Date	Planned Completion Date
USBR Award <i>Note: can take up to 16 weeks for Rubicon to fabricate gate May order with USBR approval before NTP.</i>	10/01/20	12/01/20
USBR NTP	12/01/20	12/01/20
Pre-Construction Contractor/Vendor Procurement: Engineering/Design, Concrete and Gate with associated structures, Concrete Subcontractor	12/07/20	01/01/21
Construction/Installation Coordinate/schedule with affected water user(s) Site Preparation Concrete Structures/Foundations Gate Installation Cleanup and Debris removal	02/03/21 ¹	03/06/21 ¹
Completion Closeout/Final Report	04/01/21	06/30/21

¹ Construction and Installation will only take four weeks but will take place in the late winter between these two dates. There is less demand (quantity and time), thus minimal impact to our producers/growers. We would schedule our work as to accommodate them. Ideally, we would like to start construction in November, but unless we receive the Award and NTP in August or September from USBR, this is unlikely.

Permits Required: None

Engineering/Design Work Required for Project: Work will be performed by Rubicon and George Cairo Engineering. Design and Fabrication of Rubicon Gate, Controls and Framework. Design of Concrete Sidewalls, Structure Modifications, Safety Measures, Aprons and Appurtenances

New Policies or Administrative Actions Required to Implement Project:

No new policies or actions, PIDD always gets approval from their board and coordinates improvement projects with the water users to minimize impact to their agricultural operations.

Describe the Environmental Compliance Process and Estimate:

No earth disturbing activities and no demolition of existing structures. New gate structure to be installed on elevated "borrow" material used to construct canal. Anticipate Categorical Exclusion at no costs.

1. Technical Proposal and Evaluation Criteria

1.5 Evaluation Criteria (Continued)

D. Nexus to Reclamation

This project is connected to the Reclamation activity of improving efficiency and conservation of our water systems for our district.

The PIDD receives Reclamation Water: **Yes**

Via the Gillespie Dam Lift Station

Project on Reclamation lands or facilities: **NO**

PIDD utilizes Gila River water and ground water (wells) for the irrigation systems.

Project in same basin as Reclamation project or activity: **Yes**

Gila River (Provides 25% water supply)

Aqua Fria River and the Salt River (Upstream Tributaries)

Lower Colorado River (Downstream – confluence in Yuma)

Project contributes water to a basin where a Reclamation project is located: **Yes**

Gila River Valley – Lower Colorado River Basin (Confluence of Colorado River in Yuma)

Tribal Benefit: **Yes**

Ancestral lands of Hohokam, Pima, Maricopa, Opa (Protected)

Water conservation measures (improvements (Protect native plants and species)

Work Opportunity for Tohono O’odham Nation San Lucy Community

E. Department of Interior and Bureau of Reclamation Priorities

Creating a conservation stewardship legacy second only to Teddy Roosevelt:

This project utilizes new scientific/hydrological strategies coupled with the Rubicon flume gate design to create a more efficient and responsive water delivery system. Located in a rural area, and surrounded by desert, we are uniquely positioned to promote stewardship. Through our partnerships with our water users (farmers) we are creating a balance between water conservation, planning, efficiency, and cost savings. We are addressing issues brought about by changes in the environment, especially drought. We are using a “Best Practices” model by conserving water and subsequent watersheds and habitats) by a variety of voluntary activities (PIDD as well as On-Farm) as previously discussed (seasonal fallowing, irrigation method, crop vs. water requirements, system delivery improvements, etc.). Through our partnerships with our water users (farmers) we are creating a balance between water conservation, planning, efficiency, and cost savings.

North of us, the Gila River and Gillespie dam area create watershed and riparian areas. The buffer zone that exists between us and that area consists of desert with washes (replenished by rainfall, complemented by the surrounding mountainous terrain). Most of the viable habitat is located along this river corridor, with native plants (reeds, cottonwood, willow, and sedges) then native shrubs and trees. These provide habitat for our native species as well as migratory birds. This watershed creates a natural wildlife corridor from New Mexico to California. We are southwest of the Gila River (and its tributaries: Aqua Fria and Salt Rivers) that continues west to join the Lower Colorado River in Yuma that support wildlife preserves (KOFA. Mitty Lake and Cibola).

1. Technical Proposal and Evaluation Criteria

1.5 Evaluation Criteria (Continued)

Utilizing our Natural Resources:

We have limited natural resources in this fragile desert environment, other than water. We are using a “Best Practices” model by **conserving, protecting, and restoring** our natural resources (water and subsequent watersheds and habitats) through PIDD system improvements and On-Farm voluntary activities (as discussed in previous sections).

Restoring Trust with Local Communities:

As a small isolated rural close-knit community, our trust has been tried and tested through several generations. We have depended upon each other for many years and continue to foster that trust through our friendships, partnerships and communication. In 1919 we raised two million dollars to construct our irrigation system and 1920 a rancher, built the 1,700 LF Gillespie Dam to serve our agricultural community. We work together with local, county, state, and Federal agencies (USBR, AZ Fish and Game, AZ DWR, BLM, USFWS). Our office is in Gila Bend, surrounded by farmland and desert. We and our staff are readily assessable to our community. Many of our staff have lived in this area for many years and are involved in farming. Through our outreach efforts we are developing a network of support from local and state offices.

Striking a Regulatory Balance:

We work together to support and protect our local community and resources. Our only regulatory challenges are the environmental compliance requirements for improvement projects, but most of these areas are farmland and already disturbed. Work is usually performed in the canal or its right-of-way on elevated berms/roads (on imported borrow of fill dirt). We usually receive a Categorical Exclusion. We work with local, county, state, and Federal agencies (USBR, AZ Fish and Game, AZ DWR, BLM and USFWS) to resolve any issues. Watershed/riparian areas, drainages, and washes form a buffer zone and are not utilized. Our appointed PIDD Board addresses and votes on issues.

Modernizing our Infrastructure:

We have just begun to pursue funding opportunities to improve and maintain our inefficient system. Our major obstacle is funding, as farming does not generate a surplus of revenue. It is also difficult to find qualified staff that can quickly make calculations, evaluate needs, address problems and take appropriate actions. Due to our size, number of canals and multiple water sources, it is imperative that we network our water source controls with our delivery controls. Improvements to our infrastructure are based on the extensive scoping study provided by Rubicon and reviewed by GCE to upgrade our gates and network our system. We have approximately 99 miles of canals, laterals, and ditches (100% lined) and 85 manual lateral gates which need to be replaced with automated ones. Our water users are very supportive in addressing system deficiencies as well as improving system efficiencies. We have already installed 2 Rubicon gates as well as recently placing 8/84 Wells on remote controlled and monitoring (Crop Link by Agsense).

2. Project Budget

2.1 Funding Plan and Letters of Commitment

The Federal share of this project is 42% and the Non-Federal Share is 58% from the Paloma Irrigation and Drainage District.

PIDD Staff will be utilized for specific tasks during this four-week construction phase (February – March) with (Four on-site personnel: hours ranging from 80 to 120 hours each). We will utilize our staff and heavy equipment. The installation and commissioning will be overseen by a GCE and Rubicon representative, but PIDD’s responsibilities will include project management, site preparation, some demolition, fill/compaction, concrete work, gate installation, dust control, cleanup and removal of debris and material at completion. By using our own staff costs will be greatly reduced because less hours will be required, and we will utilize our own equipment.

Costs incurred before start date: None (May need to place order for Rubicon Gates since it is a long lead item that takes 16 weeks to fabricate)

2.2 Budget Proposal

Total Project Costs

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal Funding	\$75,000.00
Costs to be paid by the Applicant	\$103,572.02
Value of third-party contributions	\$0.00
TOTAL PROJECT COSTS	\$178,572.02

Federal Funding

BUDGET ITEM DESCRIPTION	AMOUNT
Rubicon Flume Gate 94.6 Inch Frame (75.57% of \$99,250)	\$75,000.00
TOTAL FEDERAL FUNDING	\$75,000.00

Non-Federal Funding (PIDD) – In Kind and Cash

BUDGET ITEM DESCRIPTION	AMOUNT
Salaries and Wages – In Kind	\$14,093.20
Fringe - In Kind	\$5,760.00
Materials and Supplies – Cash (24.43% of \$99,250 + \$1,700)	\$25,950.00
Equipment – In Kind or Cash if rented	\$22,800.00
Contractual - Cash	\$18,735.00
In Direct Costs – De Minimus In-Kind	\$16,233.82
TOTAL NON-FEDERAL FUNDING	\$103,572.02

2. Project Budget

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	\$/Limit	Quantity		
Salaries and Wages				
Project Manager	\$66.35	120	Hrs	\$7,962.00
Water Master/Foreman	\$30.89	80	Hrs	\$2,471.20
Equipment Operator	\$22.00	80	Hrs	\$1,760.00
Laborer	\$15.00	80	Hrs	\$1200.00
Adm. Assistant	\$17.50	40	Hrs	\$ 700.00
Total		400	Hrs	\$14,093.20
Fringe Benefits				
Project Manager	\$20.00	120	Hrs	\$2,400.00
Water Master/Foreman	\$10.00	80	Hrs	\$ 800.00
Equipment Operator	\$20.00	80	Hrs	\$1,600.00
Laborer	\$8.00	80	Hrs	\$640.00
Adm. Assistant	\$8.00	40	Hrs	\$ 320.00
Total		400	Hrs	\$5,760.00
Equipment (PIDD)				
Front End Loader John Deere 624K	\$120.00	40	Hrs	\$4,800.00
Rubber Tired Excavator Gradall XL5100	\$140.00	40	Hrs	\$5,600.00
Dump Truck – Kenworth	\$125.00	20	Hrs	\$2,500.00
Water Truck – GMC	\$75.00	20	Hrs	\$1,500.00
Service Truck 1 Ton 2000 Ford	\$80.00	80	Hrs	\$6,400.00
Project Manager Truck	\$25.00	80	Hrs	\$2,000.00
Total		220	Hrs	\$22,800.00
Materials and Supplies				
Safety Supplies	\$500.00	1	LS	\$ 500.00
Rubicon Flume Gate 94.6 Inch Frame	\$99,250.00	1	LS	\$99,250.00
Concrete	\$120.00	10	CY	\$1,200.00
Total				\$100,950.00
Contractual/Construction				
Engineering and Design Concrete	\$10,235.00	1	LS	\$10,235.00
Concrete Contractor	\$4,000.00	1	LS	\$4,000.00
Installation Supervision & Commissioning	\$4,500.00	1	LS	\$4,500.00
Total				\$18,735.00
Environmental and Regulatory Compliance – Categorical Exclusion				\$0.00
TOTAL DIRECT COSTS				\$162,388.20
Indirect Costs – De-Minimus Fixed	10%			\$16,233.82
TOTAL ESTIMATED PROJECT COSTS				\$178,572.02

2. Project Budget

2.3 Budget Narrative

Salaries and Wages:

Project Manager: Robert VanHofwegen, District Manager 120 Hrs

Manage Overall Project:

Bid Procurement Process

Meet with Contractor Installation of Rubicon Gate/Associated Controls/Structures

Scheduling of Staff and Equipment.

Water Master/Foreman/Crew Leader: 80 Hrs

Assist Project Manager – supervise PIDD employees

EQ Operator: 1 x 80 Hrs

Initial site preparation – some demolition activity and water diversion system if required, assist with construction – gate and concrete structure placement and testing.

Laborer: 1x 80 Hrs

Assist with construction – gate attachment, testing and structural supports

Administrative Assistant: 40 Hrs

Purchasing, Payroll

Fringe: Fixed

Project Manager

Water Master

Equipment Operator

Laborer

Adm. Assistant

PIDD certifies that the labor rates included in the budget proposal represent the actual labor rates of the identified personnel.

Travel: No Travel Required

2. Project Budget

2.3 Budget Narrative (Continued)

Equipment: Will use PIDD equipment (PIDD Schedule)

Front End Loader – Site preparation and final cleanup, installation

Rubber Tired Excavator – Site preparation and final cleanup, installation

Dump Truck – Haul away construction debris and material

Water Truck – Dust Control

Service Truck – Used in support of PIDD Crew on-site

Project Manager Truck – project management at site

Materials and Supplies:

Safety: Barriers, Level D Personal Vests, glasses, hard hats, gloves; Drinking Water

Concrete 10 cu yds for support structures

Rubicon Flume Gate 94.6 Inch Frame

Contractual:

Engineering and Design of Concrete support structures

Gate Installation: This work will be performed by Rubicon staff and augmented by PIDD Personnel & Equipment.

Concrete Contractor: Use Forms to make support structures

Inspection Services: GCE to perform inspection services

Other:

Environmental Regulatory Compliance Costs: Most likely Categorical Exclusion at no costs.

No earth disturbing activities and no demolition of existing structures. New gate structure to be installed on elevated “borrow” material used to construct canal.

See responses to Environmental Compliance Questions on page 20 to determine what needed and preparation of Environmental compliance documents as required

3. Environmental and Cultural Resources Compliance

- 3.1 Impact to Surrounding Environment** **NONE**
No significant impact, all earth-disturbing work will occur within existing canal and sidewalls. Canal is at higher elevation and was created with imported fill.
- 3.2 Threatened or Endangered Species, or Designated Critical Habitat** **NONE**
This area is greatly disturbed and in constant agricultural use. There are no threatened or endangered species present or critical habitat. *See page 14 last paragraph for description of surrounding biomes.*
- 3.3 Wetlands or Other Surface Waters (CWA) – Waters of the United States** **NONE**
There are no wetlands within the project boundary.
- 3.4 Water Deliver System Date of Construction**
The Gila Bend Main Canal was constructed in 1919.
- 3.5 Modifications or Effects to Individual Features of a Delivery System (i.e., head gates, canals, or flumes)** **YES - ONE**
A manual Jacklift gate will be replaced by a Rubicon gate.
- 3.6 Features in the Paloma Water and Drainage District Listed or Eligible for Listed on the National Register of Historic Places** **NONE**
None in district, but these are 5 to 30 miles away: Stout Hotel, Old Hwy 80, Gila Bend Overpass, Gila Bend Steam Locomotive Water Stop, Gillespie Dam, Gillespie Dam Hwy Bridge, Painted Rock Petroglyph Site, Fortaleza Site (Ancient Hohokam Fort On Hill) and Gatlin Site (Ancient Hohokam Village with homes and irrigation canals).
- 3.7 Archaeological Sites in Proposed Project Area** **NONE**
There are no archaeological sites in the project area, but 10-20 miles away: Painted Rock Petroglyph Site, Fortaleza Site (Ancient Hohokam Fort on Hill) and Gatlin Site (Ancient Hohokam Village with homes and irrigation canals).
- 3.8 Disproportionately High or Adverse Effects on Low Income or Minority Populations** **NONE**
No disproportionately high or adverse effects on low income or minority populations. If anything, this will have the opposite effect economically.
- 3.9 Limit Access to and Ceremonial Use of Indian Sacred Sites or Impact on Tribal Lands** **NO**
Not limit access to and ceremonial use of sacred sites or impact Tribal lands.
- 3.10 Contribution to Introduction, Continued Existence, or Spread of Noxious Weeds or Non-Native Invasive Species** **NO**
If anything, this project will have the opposite effect, reducing noxious weeds and non-native invasive species, including aquatic vegetation.

4. Required Permits or Approvals

There are no permits or approval required for this project.

5. Letters of Support

See attachment. Also, approved by Board (see resolution)

6. Official Resolution

Resolution is attached.

PRP Farms

19312 South Tuthill Rd.

Buckeye, AZ 85326

To Whom It May Concern,

We write this letter on behalf of Paloma Irrigation and Drainage District in support of their application to the USBR through your Water SMART grants: Small-Scale Water Efficiency Projects. We see these automatic gates as a great way to increase our conservation of our vital resource of water. Automation can help in many ways reducing spills, pumping costs, and over watering. With your help, these automatic gates will help our district in achieving our goals to remain sustainable.

Sincerely,



Tate Accomazzo

PRP Farms

Gila Bend, AZ

RESOLUTION 2020-1
OF
THE BOARD OF DIRECTORS OF
PALOMA IRRIGATION AND DRAINAGE DISTRICT
(Adopted February 18, 2020)

BE IT RESOLVED by the Board of Directors (the "Board") of Paloma Irrigation and Drainage District (the "District") as follows:

1. That the application for a United States Department of the Interior Bureau of Reclamation WaterSMART grant for Small-Scale Water Efficiency Projects pursuant to Funding Opportunity Number BOR-DO-20-F006 (the "Grant") by the District Manager for the District to install rubicon gates at District canal 12A lift and at the "Y" serving the D Lateral (the "Project") is hereby approved.
2. That District Manager Robert L. VanHofwegen is hereby authorized to submit the application for the Grant and to execute any and all documents, instruments and reports necessary or appropriate to apply for, obtain and use the Grant.
3. That District Manager is hereby authorized to expend up to \$200,000 of District monies for the Project, which monies the Board finds are available for this purpose, and to apply the Grant to the costs of the Project.
4. That the District will work with the United States Bureau of Reclamation to meet established deadlines for entering into a grant or cooperative agreement.

I hereby certify that the foregoing is a true and correct copy of Resolution No. 2020-1 duly adopted by the Board of Directors of the Paloma Irrigation and Drainage District on February 18, 2020.



Sharon Mills, District Secretary

Appendix

**WaterSMART Grant:
Small-Scale Water Efficiency Project**

BOR-DO-20-F006

Project 1

**Installation of Rubicon Gate (8 Foot)
At Gila Bend Main Canal**

**Paloma Irrigation and Drainage District
38401 W. I-8 # 175
Gila Bend, AZ 85337
928-683-2236**

**Rubicon Water Scoping Study
Paloma Irrigation and Drainage District
Rubicon Systems Australia Pty Ltd
May 2018**

Rubicon Water Scoping Study

Paloma Irrigation & Drainage District

Paloma Irrigation & Drainage District

May 2018

Version 1.9

