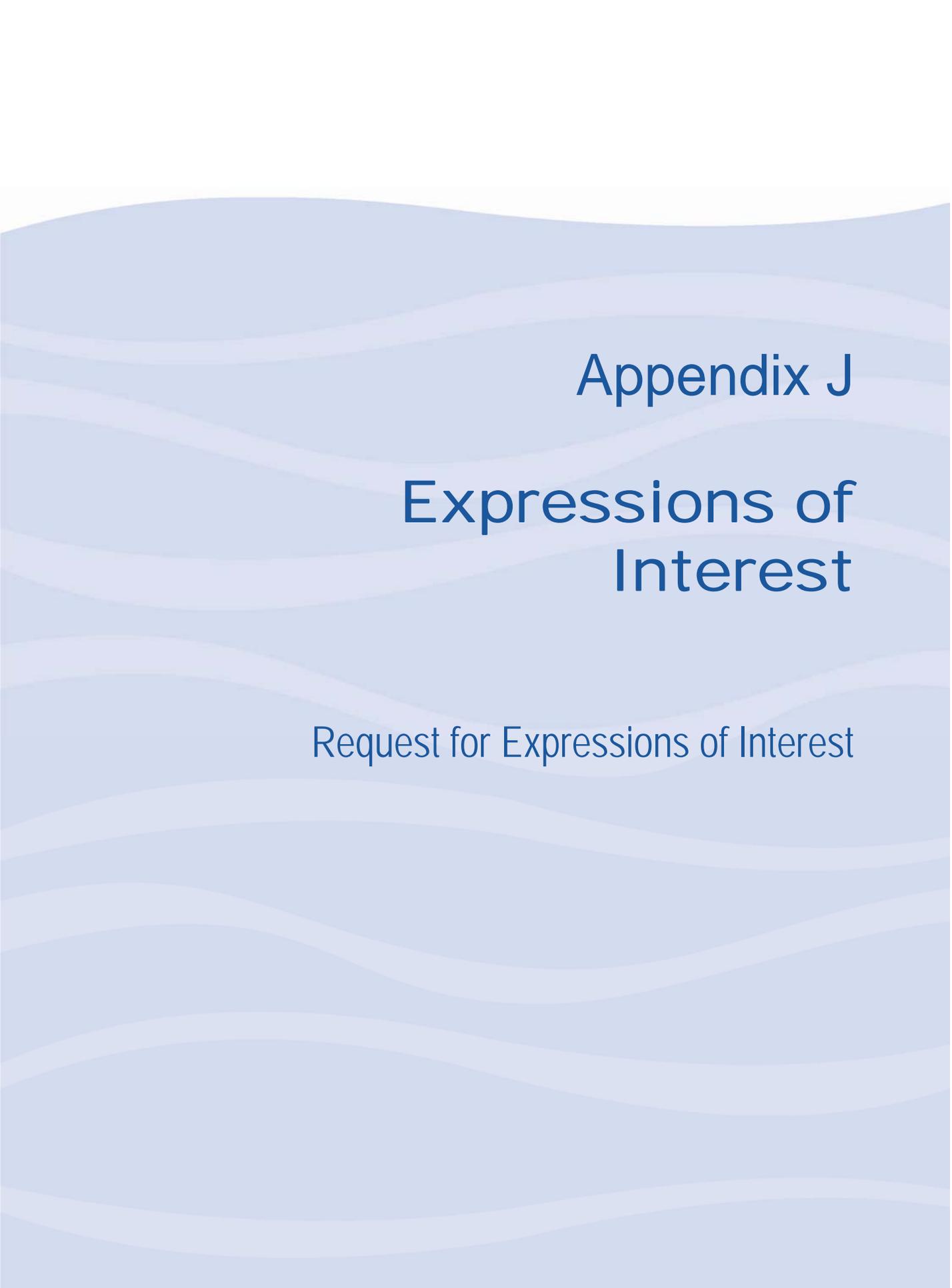


## APPENDIX J

### Request for Expressions of Interest



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Appendix J

# Expressions of Interest

Request for Expressions of Interest



# **Pima County Metropolitan Wastewater Treatment System Capital Improvement Program**

## **Alternative Project Delivery and Private Project Financing**

# **Request for Expressions of Interest**

*Issued by:*

**Pima County Wastewater Management Department  
201 North Stone Avenue, 8<sup>th</sup> Floor  
Tucson, Arizona 85701**

April 2007



**PIMA COUNTY**  
**WASTEWATER MANAGEMENT DEPARTMENT**  
201 NORTH STONE AVENUE  
TUCSON, ARIZONA 85701-1207

**MICHAEL GRITZUK, P.E.**  
DIRECTOR

PH: (520) 740-6500  
FAX: (520) 620-0135

April 23, 2007

To All Interested Parties:

The mission of the Pima County Wastewater Management Department (PCWMD) is to protect public health and safety by providing world-class service and sound environmental stewardship through the efficient conveyance, treatment and reclamation of wastewater. To achieve that mission PCWMD recognizes the value of engaging the "market" to explore alternative, optimal solutions and delivery methods as a means of implementing portions of the County's Capital Improvement Program. The County further recognizes that it is through collaboration with those entities that can make available to PCWMD "world class" innovative solutions that may result in the real cost and timesavings while implementing the Capital Improvement Program. Accordingly, in advance of those responding to this request for expressions of interest (RFEI), PCWMD expresses a debt of gratitude for those providing information that will help the County implement its mission.

For those responding to the RFEI, the County's hope is that certain knowledge may accrue to the County that will provide long-term benefits and value to the customers and citizens of Pima County. By responding to the RFEI, your effort will be contributing to that goal. In addition, your contribution may also lead to a better understanding of how public-private partnership can be used to meet long-term community benefits.

Pima County (County) is issuing this request for expressions of interest (RFEI) to solicit information from interested parties concerning the implementation of a proposed capital improvement program (Program) for its wastewater treatment system (System). Based on an extensive study of the System conducted over the past year by the Pima County Wastewater Management Department (Department) and a team of consultants led by Greeley and Hansen, the proposed Program has been developed. The County intends to expeditiously implement major portions of the Program. The scale of the program is substantial, with budget estimates ranging in excess of \$500 million (basis 2006 dollars) over a multi-year period, depending upon financing availability and other factors.

The Program has been developed in close conjunction with internal and external stakeholders including the City of Tucson (City), which has independent responsibility for potable water production, treatment and distribution in the metropolitan region. The City has rights with respect to a large portion of the effluent produced by the County's wastewater system. A portion of the System effluent is currently further treated by the City and used for water reclamation purposes. The City has assisted in the preparation of this RFEI and may use relevant information

developed under this RFEI for its own water system capital improvement program planning purposes.

Through the issuance of this RFEI, the County is seeking input from respondents as to their potential interest in participating in the implementation of the Program and as to the project delivery method that they would recommend the County to employ. Input concerning the scope, extent, nature and schedule for the Program is also being sought.

The County expects that, through the issuance of this RFEI and the associated exchanges of information between the County and potentially interested firms, prior to the commencement of any formal procurement process, it will be able to obtain useful information regarding private sector participation in the Program in an organized and systematic fashion. The County also intends to utilize the RFEI process to familiarize the market with the contracting opportunities, which are expected to emerge from the Program, and to invite comment as to the private sector's requirements and preferences regarding potential participation in the Program. As a result, the structuring of the planned project procurements should be improved through greater understanding of the objectives and requirements of the companies participating in the market for these services.

Arizona law, in addition to traditional design-bid-build contracting, authorizes the County to utilize several alternative project delivery methods for carrying out the Program. These include design-build contracting and several variants, such as design-build-operate, design-build-finance-operate, and design-build-finance-own-operate. Construction-manager-at-risk contracts are also permitted. Each alternative method must commence with a request-for-qualifications process. RFEI responses will help the County gauge the level of market interest in particular delivery methods and determine the extent to which the Program will be implemented on a traditional or alternative basis.

The County is also aware of the heightened interest of financial firms in providing private financing for public infrastructure. Given the extent of the capital needs of the Program, as well as the projected \$2 billion cost of the County's capital improvement program outside the wastewater sector, this RFEI is also intended to invite input from financial institutions as to potential private project financing approaches that the County may wish to consider in today's marketplace.

The County, accordingly, invites participation in this RFEI process by all private sector firms that may wish to participate in any aspect of the Program, whether for any or all of the particular projects under consideration. Such firms are expected to include companies with expertise in the design, construction, operation, maintenance, repair, management, and financing of wastewater and power infrastructure facilities, as well as biosolids residuals management services.

This RFEI does not constitute the formal commencement of any procurement process under applicable State law. Participation by interested firms is strictly voluntary, and any information obtained by the County may be freely used in any manner the County deems appropriate. An election not to respond to this RFEI will not disqualify or disadvantage any firm in the procurement process for any planned project once the County formally commences the process.

A pre-submittal meeting will be held on May 23 2007, between 9:30 AM and 12:00 PM at the following location:

Joel D. Valdez Main Library  
Basement Meeting Room  
101 North Stone Street  
Tucson, Arizona

If requested, tours of Roger Road and Ina Road Facilities will be conducted between 1:00 PM and 5:00 PM on May 22 2007. Please advise via e-mail to ROMPEOI@wwm.pima.gov with number of visitors by May 18 2007.

Attendance at the pre-submittal meeting is encouraged but not a requirement for making a submittal in response to this RFEI.

This RFEI does not obligate the County in any manner with respect to the Program. Respondents shall bear all costs relating to their participation in the RFEI process, without any reimbursement by the County.

The County requests that responses to the RFEI be submitted by no later than 5:00 PM Arizona time on June 22, 2007.

We look forward to your participation and thank you for your interest.

Sincerely,

Michael Gritzuk  
Director  
Pima County Wastewater  
Management Department

Enclosure: Request for Expressions of Interest

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## Request for Expressions of Interest

### Section 1 Introduction

#### 1.1 Overview

The Wastewater Management Department (Department) of Pima County, Arizona (County) is nearing completion of its Regional Optimization Management Plan (ROMP). The ROMP is the culmination of a year-long intensive study of the capital improvements required to be made to the County's wastewater treatment system (System) through 2030. The County expects to commence procurement of major elements of the ROMP later this year. These elements consist of facility replacements, expansions and upgrades that must be built to meet expected capacity and effluent quality requirements, including reductions of ammonia and nitrogen concentrations discharged into the Santa Cruz River. Cost projections for planned near term capital improvements exceed \$500 million. Priority capital improvement projects (Projects) included in the ROMP consist of:

- ***New 24 Million Gallons per Day (mgd) Wastewater Treatment Plant.*** At the Roger Road site, a new facility will replace the existing Roger Road wastewater treatment facility (Roger Road WWTP).
- ***Major Upgrade/Expansion of the Ina Road Water Pollution Control Facility.*** The upgrade will include nitrogen (ammonia) removal and the expansion will increase the plant's capacity from 37.5 mgd to 50 mgd (Ina Road WPCF).
- ***Power Generation Facilities.*** At the Ina Road WPCF, retrofitted or new facilities will recover digester gas (methane) to generate power and heat for plant utilization (Power Facilities).
- ***Biosolids Services.*** Treatment, production and disposal facilities or services will be developed and implemented at the Ina Road WPCF (Biosolids Services).
- ***Outlying (Smaller) Treatment Facilities.*** Several small wastewater treatment facilities are owned and operated by the County which will require expansion to accommodate rapid population growth near those facilities.

The ROMP also includes a major transmission pipeline for the two-way conveyance of untreated wastewater between the existing Roger Road WWTP/proposed new Roger Road WRF and the Ina Road WPCF (Plant Interconnect Transmission Pipeline). Procurement of the Transmission Pipeline has commenced on a construction-manger-at-risk basis.

The ROMP concludes that there are several benefits that may accrue to Pima County through the exploration of creative public-private partnerships. For those initial areas under consideration, these benefits may include:

- ***Private Financing and Innovative Public Financing Options for ROMP Capital Improvements.*** If private financing proves feasible, a key benefit to the County would be a reduction in the amount of debt needed to be raised by the County.

## Request for Expressions of Interest

- **Green Power Generation from Department Facilities.** Benefits from “green” power generation include a reduction in long-term operation and maintenance costs for power, as well as the potential to generate revenue for the County.
- **Innovative Biosolids Disposal.** Has the potential to avoid the County’s reliance on a single or limited number of providers for biosolids disposal. In addition, it could provide an offset for long-term operation and maintenance costs, as well as create confidence in a sustainable long-term biosolids disposal program.
- **Methods for CIP Project Delivery.** Offers the County the potential to achieve greater efficiency in the implementation of capital projects through alternative project delivery methods that may provide cost savings over the traditional method of project implementation. The County is in the process of investigating alternative project delivery methods to the traditional bid-build method and is interested in receiving information from interested parties, including the private sector, which will help in determining the appropriate project implementation approach for each Project. Upon the completion of this review, the County will decide whether to proceed with an alternative project delivery method, or methods, for the implementation of the Projects or proceed using the traditional bid-build approach. Regardless of the method or methods chosen, it is anticipated that procurement of some of the Projects will commence in late 2007.

With respect to financing options for the Projects, the County is exploring all public and private innovative options that are available to the County. Questions relating to various private financing options are set forth below in Section 5.6.

### 1.2 RFEI Objectives

Through the issuance of this RFEI, the County is soliciting information from respondents on possible project delivery methods and related matters for the development of the Projects. The information requested in response to this RFEI is strictly voluntary on behalf of the respondent and may be used by the County in selecting project delivery methods and structuring the procurements. The following project delivery methods are permissible in Arizona, and are being considered as potentially viable procurement approaches to the implementation of the Projects:

- Traditional Design-Bid-Build;
- Design-Build;
- Design-Build-Finance (Turn-Key);
- Design-Build-Operate;
- Design-Build-Finance-Operate;
- Design-Build-Finance-Own-Operate; and
- Construction Manager at Risk.

The information provided in response to this RFEI will be used as part of the overall evaluation process for selecting the ultimate delivery method or methods. The County seeks particularly to receive information from parties that have had actual experience using one or more of the implementation approaches being contemplated, and that are potentially interested in submitting a proposal for a particular Project. Several firms have already made general inquiries of the County concerning contract opportunities that might arise from the ROMP. The County is issuing this RFEI in part to provide a

## Request for Expressions of Interest

structured means by which to receive private sector comment in order to inform its public policy decisions, and to gauge the interest of qualified firms to enter into contracts using alternative project delivery methods.

It is requested that responses to this RFEI be in compliance with the schedule and requirements set forth in this RFEI. The County may elect to:

- Supplement, amend, otherwise modify or cancel this RFEI
- Postpone or change the date for receipt of responses to the RFEI
- Cancel or modify the Projects at any time

This RFEI is issued by the County solely for the purpose of gathering information regarding interested parties' perspectives on project delivery methods, private project financing, and related matters concerning Projects. The purpose of this RFEI is to simply solicit information and expressions of interest for the County's information and use and does not constitute a solicitation or procurement document for the development of the Projects, nor will it be a factor in determining to whom the Projects are awarded. A response to the RFEI is not mandatory for future participation in any procurement process. Failure to submit a response to this document will not disqualify any firm from submitting a response to any formal procurement process for the Projects. The submittals received may be made available to the public if requested. No response can be kept confidential.

### 1.3 Pima County Wastewater System

The Pima County wastewater system consists of two major wastewater treatment plants, a water reclamation plant, and eight outlying wastewater treatment facilities. The associated conveyance systems operate by gravity with some pump stations and force mains. The existing System components and recommendations for future improvements and modifications are discussed in greater detail below in Sections 2 and 3.

### 1.4 Regional Optimization Master Plan (ROMP) Study

The purpose of the ROMP has been twofold. The first purpose was to determine an optimal strategy for:

- Select treatment process to comply with regulatory agency effluent quality requirements;
- Addressing long-term flow/capacity management;
- Treating additional wastewater loading within current/future service basins;
- Evaluating existing facility rehabilitation needs;
- Optimizing solids handling; and
- Integrating reclaimed water program needs.

The second purpose was to develop a coordinated capital improvement design and construction program, including, at a minimum, cost estimates, schedules and a recommended project delivery and funding strategy for implementation of all resulting projects and integration with the Program. The current estimated cost of the ROMP Program is \$536 million in 2006 dollars.

## Request for Expressions of Interest

The ROMP identifies the optimal strategy for the treatment of current and projected wastewater flows to the existing Roger Road WWTP/new Roger Road WRF and the Ina Road WPCF, including the reduction of the amounts of ammonia and nitrogen concentrations discharged into the Santa Cruz River to comply with current and future environmental regulatory requirements. In addition, the County seeks to optimize biosolids treatment and disposal, and consider and evaluate updating the level of biosolids treatment to produce Class A biosolids.

The optimal strategy for long-term flow/capacity management, treatment of additional loading of metro basin wastewater, existing facility rehabilitation, optimized solids handling and optimal methods to provide reclaimed water are identified in the ROMP strategy. In addition a coordinated capital improvement design and construction program, including construction cost estimates, schedules and a recommended project delivery and funding strategy for implementation of all resulting projects is developed. Various hydraulic and process modeling were used in the evaluation of alternatives and development of the final recommendations.

The goal of the master plan is to serve as a broad road map. The plan is based on current and potential future regulatory and Department customer requirements. This master plan forecast needs for wastewater treatment capacity throughout the Department service area and the facilities required to meet those needs through the year 2030. The master plan builds upon several planning and engineering efforts previously performed for and by the Department. The plan identifies how and when wastewater treatment facilities are upgraded and expanded, as well as how existing facilities are integrated into future expansions or decommissions through the year 2030.

The plan recommends necessary wastewater treatment components and systems, phasing schedules and cost apportionments for future implementation of Department wastewater facilities.

### 1.5 ROMP Capital Improvement Plan

The ROMP identifies specific needs throughout the System, and operations that are necessary to meet its current and future regulatory obligations and comply with good practices for fully functional and efficient operations capable of 24-hour 7-day per week service. The areas of need will require new or rehabilitated facilities in the near future. These facilities are:

- ***New 24-mgd Roger Road WRF.*** At the Roger Road site a brand new facility will be constructed along side of the existing wastewater treatment operations. The new facilities will have the operating capacity to treat 24 million gallons of wastewater per day (additional capacity of 8 mgd may be added to the new facilities in the future). The facility will be designed around the Bardenpho process with the treatment capacity to achieve an ammonia limit of less than 2 mg/L. The existing Roger Road WWTP will be decommissioned and demolished to make room for economic development at that site.
- ***Major Upgrade of the Ina Road WPCF.*** The existing wastewater treatment facilities at Ina Road consist of two treatment process trains designed to meet different effluent criteria. The future treatment process will integrate the two existing wastewater processes to provide a system to remove high levels of nitrogen with the Bardenpho process. In addition the combined capacity of the existing systems will be expanded from a capacity of 37.5 mgd to 50 mgd.

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- **Power Generation Facilities.** There is an existing power generation facility at the Ina Road WPCF that generates power and heat for internal use at the plant. In the future biosolids from the existing Roger Road WWTP will be transferred to the centralized solids processing center at Ina Road WPCF which will increase the amount of biogas available for power and heat production. The biosolids will be anaerobically digested and the gas made available for power and heat generation. The existing power generation facilities are scheduled to be upgraded or replaced with modern, efficient systems with the capacity to utilize the entire biogas production. Currently, the plant supplements the biogas production with purchased natural gas to achieve its power production goals.
- **Biosolids Services.** The current biosolids practice is to generate Class B biosolids and to contract out the disposal for land application. Biosolids at the two major treatment plants are treated on site with mesophilic digesters. Digested biosolids at Roger Road are pumped to Ina Road for thickening with the Ina Road digested biosolids. The combined thickened biosolids are discharged to a storage facility prior to loading tanker trucks for land application. In the future digestion will be discontinued at Roger Road and all solids will be digested at Ina Road. The County is seeking alternative treatment and/or disposal options to broaden its flexibility to meet the changing regulatory and marketing demands and its reliability on a single source of disposal.
- **Outlying (Smaller) Treatment Facilities.** Several small wastewater treatment facilities are owned and operated by the County which will require expansion to accommodate rapid population growth near those facilities. The County currently operates nine outlying wastewater treatment facilities. Seven of the nine facilities are located in areas of rapid population growth. The future plan is to expand four of these facilities and combine three with the other existing facilities through interconnecting gravity sewers. The remaining two facilities will remain at their current size because of buildout or growth restrictions in the service areas. The four plant expansions will increase capacities from less than one million gallons per day to approximately 4 to 6 million gallons per day. One facility is expected to increase to over 10 mgd in the 25-year planning period.

### 1.6 County Retained Responsibilities

In general, under any procurement approach to the Projects, the County will retain responsibility for policy, planning, regulatory enforcement, permitting, capital improvements, setting rates, billing and collection, and overall administrative and financial management of the utility enterprise funds.

Ownership, financing and operational responsibility shall also remain with the County with respect to the entire System, except to the extent that the County considers using the design-build-finance, design-build-operate, design-build-finance-operate, or design-build-finance-own-operate procurement models to implement particular Projects.

### 1.7 Timetable

Following issuance of this RFEI, respondents may submit written questions to the County to assist them in preparing their responses. The deadline for receipt of questions concerning this RFEI is June 13, 2007. The County may, but is not be obligated to, respond to such questions. All responses to these questions and requests for additional information which the County determines to warrant a response will be

## Request for Expressions of Interest

addressed at the Pre-Submittal Meeting, if respondent's questions are received prior to such meeting, or issued in the form of addenda to this RFEI.

The County will hold a meeting (Pre-Submittal Meeting) to present the Projects and the goals and objectives of this RFEI to potential respondents and to provide them with the opportunity to ask pertinent questions. The Pre-Submittal Meeting will take place at 9:30 AM on May 23, 2007 at Joel D. Valdez Main Library, 101 North Stone Street, Tucson, Arizona 85701.

For planning purposes, the County requests that each potential respondent planning to attend the Pre-Submittal Meeting notify the County by e-mail to [ROMPEOI@wwm.pima.gov](mailto:ROMPEOI@wwm.pima.gov) by May 18 2007 of the total number of individuals representing such potential respondent that will be in attendance at the Pre-Submittal Meeting.

The County requests that responses be submitted no later than 5:00 PM Arizona time on June 22, 2007 (RFEI Response Due Date). Responses should be reasonably succinct. The County further requests that responses include a letter of transmittal that identifies the name, address, title, telephone number, and email address of the contact person who will serve as the interface between the County and the respondent.

One original and ten (10) hard copies as well as one electronic copy of respondent's response should be submitted on or before the RFEI Response Due Date to:

Mr. Michael Gritzuk, Director,  
Pima County Wastewater Management Department  
201 N. Stone Avenue, 8th Floor,  
Tucson, AZ 85701

### 1.8 Communications

Inquiries, questions and correspondence relating to this RFEI should be submitted by e-mail to [ROMPEOI@wwm.pima.gov](mailto:ROMPEOI@wwm.pima.gov).

### 1.9 Costs

The costs and expenses associated with the preparation of a response, attendance at the Pre-Submittal Meeting, and preparation of all other information required pursuant to this RFEI will be borne by the respondent. In no event will a respondent have a claim against the County, its staff, or its consultants or agents for reimbursement of any such costs or expenses.

### 1.10 Respondents

The County is seeking responses from private firms, or teams of private firms, with expertise in developing, designing, building, operating and maintaining, managing, or financing wastewater treatment facilities and systems, or any combination of the foregoing.

Particularly, the County is interested in receiving useful input from private firms who may be planning to participate in any or all of the particular Projects that are being considered under the following viable

## Request for Expressions of Interest



procurement approaches: traditional bid-build; design-build; design-build-finance (turn-key); design-build-operate; design-build-finance-operate; design-build-finance-own-operate; or construction-manager-at-risk.

Stakeholders not in the private sector are also invited to make submittals as to matters addressed in this RFEI if such stakeholders have information they believe the County should consider in making its ROMP implementation decisions.

### 1.11 County Website

Additional documents and information may be available for use by the Respondent. Additional information, if and when available, will be posted on the Internet at <http://www.pima.gov/procure/ifbrfp-dc.htm>.

Respondents are advised that the documents posted on the website will have been prepared in the course of the County's development of the Projects, as well as other County projects.

### 1.12 County Team

The information received in response to this RFEI will be reviewed and analyzed by representatives of the Pima County Wastewater Management Department, the Pima County Attorney's Office, the Pima County Finance and Risk Management Department, the City of Tucson, Greeley and Hansen (consulting engineers), Hawkins Delafield & Wood LLP (special counsel), and Raftelis Financial Consultants (financial advisors).

## Request for Expressions of Interest

## Section 2 Facilities, Operations and Budget

### 2.1 Description of the Department and Its Responsibilities

Department operations are authorized by state legislative authority (Arizona Revised Statutes, Title 11, Chapter 2, Article 4). The Department's primary responsibilities are to effectively manage, operate, and maintain a regional public sanitary sewer system serving the residents of the County. Currently, the Department provides service to customers in several unincorporated areas of eastern Pima County, the Cities of Tucson and South Tucson, the Towns of Oro Valley and Marana, a portion of the Town of Sahuarita, and a portion of Pinal County. The Department is governed by the Pima County Board of supervisors (Board) and the Pima County Wastewater Management Advisory Committee (WMAC). The WMAC was established by the Board in 1986 to ensure adequate public oversight of all Department activities.

The Department is operated as an enterprise fund and is not dependent on property or sales taxes levied by the County. The Department is authorized to assess and collect fees and charges to recover its costs of operation and, through voter approval, can issue revenue bonds for the rehabilitation, construction, acquisition, and improvement of the sanitary sewer system.

### 2.2 Existing Facilities

The existing wastewater treatment facilities owned and operated by the County include two major treatment works and nine smaller facilities.

#### 2.2.1 Roger Road Wastewater Treatment Plant

The existing Roger Road WWTP is the older of the two major treatment facilities. The plant is the result of several past expansions, and currently has a permitted capacity of 41 million gallons per day. The facility is located at 2600 W. Sweetwater Drive, Tucson, Arizona 85705, just north of Prince Road between Interstate 10 and the Santa Cruz River. The existing Roger Road WWTP was first operated in 1951 as a 12-mgd activated sludge facility and was expanded with a separate 13-mgd trickling filter plant in 1960. A 13-mgd activated sludge/contract stabilization facility was added in 1967. In 1979, the facility was consolidated into a single facility with the major biological treatment process consisting of two, 165-foot diameter by 26-foot deep, plastic media, biofilters with return activated sludge capability. Digested biosolids are conveyed via force main to the Ina Road WPCF, combined with digested biosolids from the Ina Road WPCF, and thickened and applied to agricultural land as a soil amendment. Methane produced at the facility is used to generate electrical power and power on-site equipment.

As flow and influent loadings have increased at the facility, the activated sludge tanks have been placed into continuous service. The facility is currently required to meet secondary treatment limits. It is anticipated that process modification or changes will be required to lower nitrogen discharge levels from this facility. Rehabilitation is needed to repair corroded process units, replace equipment that is beyond its service life, address odor control issues, and upgrade the facility to be compliant with current environmental regulatory code requirements.

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Investigations and evaluations performed under the ROMP concluded that the existing Roger Road WWTP is aging and is difficult to retrofit with new facilities that are capable of meeting future effluent goals, while meeting environmental requirements and odor control. The Roger Road site has available space sufficient to accommodate all new treatment facilities on the existing plant site. Therefore, the ROMP concludes that a new treatment plant on the available space referred to as a Roger Road Water Reclamation Facility (WRF) option is the preferred alternative to the modification/expansion of the existing plant for Roger Road WWTP.

### 2.2.2 Ina Road Water Pollution Control Facility

The existing Ina Road WPCF was designed in 1973 and constructed from 1975 to 1977. The facility is located at 7101 N. Casa Grande Highway, Tucson, Arizona 85743, just south of Ina Road, between Interstate 10 and the Santa Cruz River. The facility was designed to produce a treated effluent meeting existing regulatory secondary treatment quality requirements. The existing Ina Road WPCF uses a 25-mgd high-purity oxygen activated sludge process, a sludge digestion and centrifuge thickening/dewatering facility for solids-handling (to meet Class B agricultural land application disposal criteria), and a complete energy-recovery system for heating, cooling and on-site generation of electrical power for plant operation from methane generated as part of the treatment process. Modifications to the original design to enhance equipment performance and reliability were completed in 1990. Average winter influent flow (peak season) is currently 23.8 mgd.

The headworks serving this facility, along with appropriate odor control facilities, were recently expanded. A Biological Nutrient Removal Activated Sludge (BNRAS) treatment works with average daily flow of 12.5 mgd has recently been constructed and placed into service. Effluent from the existing 25-mgd treatment process and the new 12.5-mgd BNRAS treatment process is combined prior to dechlorination and discharge into the Santa Cruz River.

Process modifications will also be required at this facility to lower nitrogen discharge levels. Rehabilitation is needed to repair existing corroded facilities, replace equipment that is beyond its service life, and upgrade the facility to be compliant with current environmental regulatory code requirements. Any modifications will need to consider back-up power provisions and existing/expanded need of laboratory facilities.

Investigations and evaluations performed under the ROMP concluded that most of the existing treatment facilities at the Ina Road WPCF are both viable and functional for conversion to meet the effluent goals, while meeting environmental requirements and odor control through the planning period. Additional facilities will need to be constructed to treat projected additional flows and loads.

### 2.2.3 Other Existing Facilities and Practices

Other existing facilities owned and operated by the County include:

- Randolph Park Water Reclamation Facility;
- Arivaca Junction Wastewater Treatment Facility;
- Avra Valley Wastewater Treatment Facility;
- Corona de Tucson Wastewater Treatment Facility;
- Green Valley Wastewater Treatment Facility;

## Request for Expressions of Interest

- Marana Wastewater Treatment Facility;
- Mt. Lemmon Wastewater Treatment Facility;
- Pima County Fairgrounds Wastewater Treatment Facility; and
- Rillito Vista Wastewater Treatment Facility.

The Randolph Park Water Reclamation Facility (WRF) is a 3-mgd Membrane Bioreactor facility capable of producing Class A+ reuse water for discharge into the Tucson Water Reclaimed Water System. There are no plans under the ROMP to modify the Randolph Park WRF.

Additional details on the eight (8) other existing facilities owned and operated by the County are set forth below in Section 3.5 of this document.

### 2.3 Recent Improvements and Optimization Efforts

Over the course of time, facilities and equipment at wastewater treatment plants reach the end of their useful life, become obsolete or need to be replaced or upgraded, or both, to meet more stringent regulatory requirements.

Recently completed significant improvements and optimization efforts for the existing Roger Road WWTP and the Ina Road WPCF include the following:

- Roger Road WWTP
  - Headworks – new screenings washing and compaction equipment;
  - Headworks – new grit washing and separation equipment; and
  - Sludge Handling Facilities – new gravity belt thickener (GBT) for thickening waste activated sludge (WAS).
- Ina Road WPCF
  - Secondary Treatment Process – Construction and startup of the new 12.5-mgd BNRAS plant.

Improvement and optimization efforts which are currently in progress or planned for the existing Roger Road WWTP and the Ina Road WPCF include the following:

- Roger Road WWTP
  - Sludge Thickening Facilities – Improvements to existing odor control scrubber to improve performance;
  - Plant Headworks – Addition of enclosure and odor control facilities to reduce off site odor emissions;
  - Primary Clarifiers – Addition of covers over the effluent troughs to collect air for odor control;
  - Bio Towers – Reversal of air flow, collection of air and addition of odor control facilities to reduce off site odor emissions; and
  - Electrical Power Distribution – improvements and replacements to increase reliability of electrical power supply and distribution.

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- Ina Road WPCF
  - Existing Odor Control Scrubbers - Improvements to existing odor control scrubbers to improve performance.

### 2.4 Interface with City of Tucson Water Department

The City of Tucson operates the majority of the reclaimed water distribution system in the region. Construction of the interconnect pipeline between Roger Road WWTF and the Ina Road WPCF will impact available water to the existing Tucson Water Reclaimed system for existing and future customers.

Tucson Water will, therefore, need additional capture and treatment facilities at the Ina Road WPCF. Those facilities (the Tucson Regional Reclamation Facility – TRRF) will be constructed on 10-acres +/- at the Ina Road WPCF provided for in an existing inter-governmental agreement.

The TRRF will initially be designed for a capacity of 20 mgd, expandable to 40 mgd, with allowance for additional, advanced water treatment. Construction is planned to coincide with the Ina Road WPCF expansion.

### 2.5 Economic and Financial Matters

#### 2.5.1 Rates and Charges

The Department provides wastewater collection, treatment, and disposal services for residential, commercial, and industrial customers. All customers are assessed a monthly service fee of \$5.72 and a monthly user fee of \$1.33 per one hundred cubic feet based on metered water consumption. Certain customers that contribute wastewater to the County's system that is above residential strength are surcharged for the additional cost of treatment. New residential customers are assessed an average connection fee of \$4,700 to recover the cost of capacity available in the County's system.

#### 2.5.2 Financial Summary

The Department's primary sources of revenue are from user fees and connection charges, which represent approximately 96% of annual cash receipts. As of March 2006, the Department's forecast of revenues for fiscal year (FY) 2007, excluding capital contributions, is approximately \$100.4 million. The Department's forecast of operating expenditures for FY 2007 is approximately \$70.0 million. Non-operating expenditures, which include departmental capital outlays, revenue financed capital and debt service, are projected to be approximately \$30.4 million.

Based on the County's FY 2006 Comprehensive Annual Financial Report, the Department has total assets of \$657.9 million. Total current assets are \$68.7 million and include \$42.3 million in unrestricted cash and cash equivalents. Total liabilities are \$152.2 million; and total net assets, which primarily include funds invested in capital assets net of related debt, are \$505.7 million.

The Department's long-term debt obligations include principal and interest payments on a number of revenue bond issues and a loan from the Water Infrastructure Finance Authority of Arizona. The Department's percentage of long-term debt to total assets of 19.1% and ratio of long-term debt to equity of 0.25 are both favorable compared to similar utilities. Moody's Investor Service assigned an underlying

## Request for Expressions of Interest

rating of A1 to the Department’s Series 2007 Revenue Bonds, while Standard & Poor’s assigned an underlying rating of A+. Both ratings represent above average creditworthiness relative to other municipal or tax-exempt issuers.

### 2.5.3 Financial Planning Considerations

All of the Department’s capital costs, including ROMP project costs, are presently being evaluated in a 15-year Capital Improvements Plan (CIP) currently under preparation by the Department. Funding sources were identified as part of a Baseline Financing Plan that used traditional public financing vehicles including revenue bonds, connection charges, and revenue financed capital. A projection of operating and maintenance costs was also developed that considered the effects of inflation, increased operating costs, increased demand, and the operational impact of the Department’s CIP. Total revenue requirements, both operating and capital, were projected over the forecast period to assess the potential impacts on user rates and charges. The forecast of revenue requirements also considered the Department’s liquidity objectives and debt service coverage requirements.

### 2.6 Effluent Quality Requirements

Current Arizona Pollutant Discharge Elimination System (AZPDES) permit requirements for the existing Roger Road WWTP and the Ina Road WPCF are summarized in the following table:

**Table 2-1  
Current Permit Requirements**

Parameter	Roger Road WWTP Monthly Average Limit	Ina Road WPCF Monthly Average Limit
Effluent Flow, mgd	41	37.5
BOD (5 day), mg/L	30	30
Total Suspended Solids, mg/L	30	30
Total Nitrogen, mg/L	No Permit Requirement	No Permit Requirement
Parameter	Roger Road WWTP – Monthly Average Limit	Ina Road WPCF – Monthly Average Limit
Ammonia, mg/L	No Permit Requirement	No Permit Requirement
Total Phosphorous, mg/L	No Permit Requirement	No Permit Requirement
Fecal Coliform Bacteria	200 cfu/100ml	200 cfu/100ml
e-coli Bacteria	126 cfu/100ml	126 cfu/100ml
Settleable Solids, mg/L	1	No Permit Requirement
pH	>6.5,<9.0	>6.5,<9.0
Total Residual Chlorine	0.011 mg/L	0.011 mg/L
Copper (as CU)	No Permit Requirement	38 mg/L

Projections of wastewater flows and characteristics for the year 2030 were made during development of the ROMP and are summarized as follows:

## Request for Expressions of Interest

**Table 2-2**  
**Year 2030 Wastewater Influent Flows and Characteristics**

Parameter	Roger Road WWTP Raw Wastewater Influent (with in-plant recycles) Characteristics	Ina Road WPCF Raw Wastewater Influent (with in-plant recycles) Characteristics
Flow, mgd	33.2	52.6
COD, mg/L	659	689
BOD (5 day), mg/L	301	324
sBOD (soluble), mg/L	121	123
Total Suspended Solids, mg/L	310	358
Volatile Suspended Solids, mg/L	243	282
TKN, mg/L	47	63
TP	10	15

Future AZPDES permit requirements for Roger Road WRF and Ina Road WPCF are anticipated to be as summarized in the following table:

**Table 2-3**  
**Future AZPDES Permit Requirements**

Parameter	Roger Road WRF Monthly Average Limit	Ina Road WPCF Monthly Average Limit
Effluent Flow, mgd	32	50
BOD (5 day), mg/L	5	5
Total Suspended Solids, mg/L	10	10
Total Nitrogen, mg/L	8	8
Ammonia, mg/L	2	2
Total Phosphorous, mg/L	No Permit Requirement	No Permit Requirement
Fecal Coliform Bacteria	No Fecal Coliform organisms detected in 4 of 7 samples collected during the week base on seven daily samples per week, no single sample with >23 cfu/100ml	No Fecal Coliform organisms detected in 4 of 7 samples collected during the week base on seven daily samples per week, no single sample with >23 cfu/100ml
e-coli Bacteria	No e-coli organisms detected in 4 of 7 samples collected during the week base on seven daily samples per week, no single sample with >15 cfu/100ml	No e-coli organisms detected in 4 of 7 samples collected during the week base on seven daily samples per week, no single sample with >15 cfu/100ml
Settleable Solids, mg/L	1	No Permit Requirement
pH	>6.5, <9.0	>6.5, <9.0
Total Residual Chlorine	4 ug/L	4 ug/L
Copper (as CU)	25 ug/L	30 ug/L

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### 2.7 Regulatory Matters

The County's Roger Road WWTP and Ina Road WPCF operate under AZPDES permit numbers AZ0020923 and AZ0020001, respectively, issued by the Arizona Department of Environmental Quality (ADEQ). ADEQ operates the AZPDES program under a delegation agreement with U.S. EPA. Pursuant to state law, ADEQ also issues permits under a state-wide aquifer protection permit (APP) program. See Arizona Administrative Code Title 18, Chap. 9. The Roger Road WWTP and Ina Road WPCF operate under APP permit numbers P-100655 and P-100630, respectively.

The AZPDES operating permits for the Roger Road WWTP and Ina Road WPCF require the facilities to comply with ammonia removal standards by January 30, 2014 and January 30, 2015, respectively. The ammonia removal requirements are the impetus for the ROMP process.

The AZPDES permits also include the standard array of effluent discharge concentration limitations as well as whole effluent testing standards and biosolids quality standards. In addition, the APP permits currently in place require compliance with discharge limitations for a substantially greater list of organic and inorganic compounds plus fecal coliform. Once the two facilities are expanded or replaced, new source best available demonstrated control technology will apply. These include more stringent limits for a number of parameters including fecal coliform.

In addition to these permitting constraints, the County has an existing agreement with the City regarding ownership of wastewater facility effluent. The City currently uses a significant amount of the Roger Road effluent for irrigation and aquifer recharge purposes. It operates its own filtration plant to prepare the effluent for re-use. The City will continue to need effluent from the Roger Road WWTP and plans to begin using effluent from the Ina Road WPCF once the expansion is complete.

## Request for Expressions of Interest

### Section 3 Proposed Projects

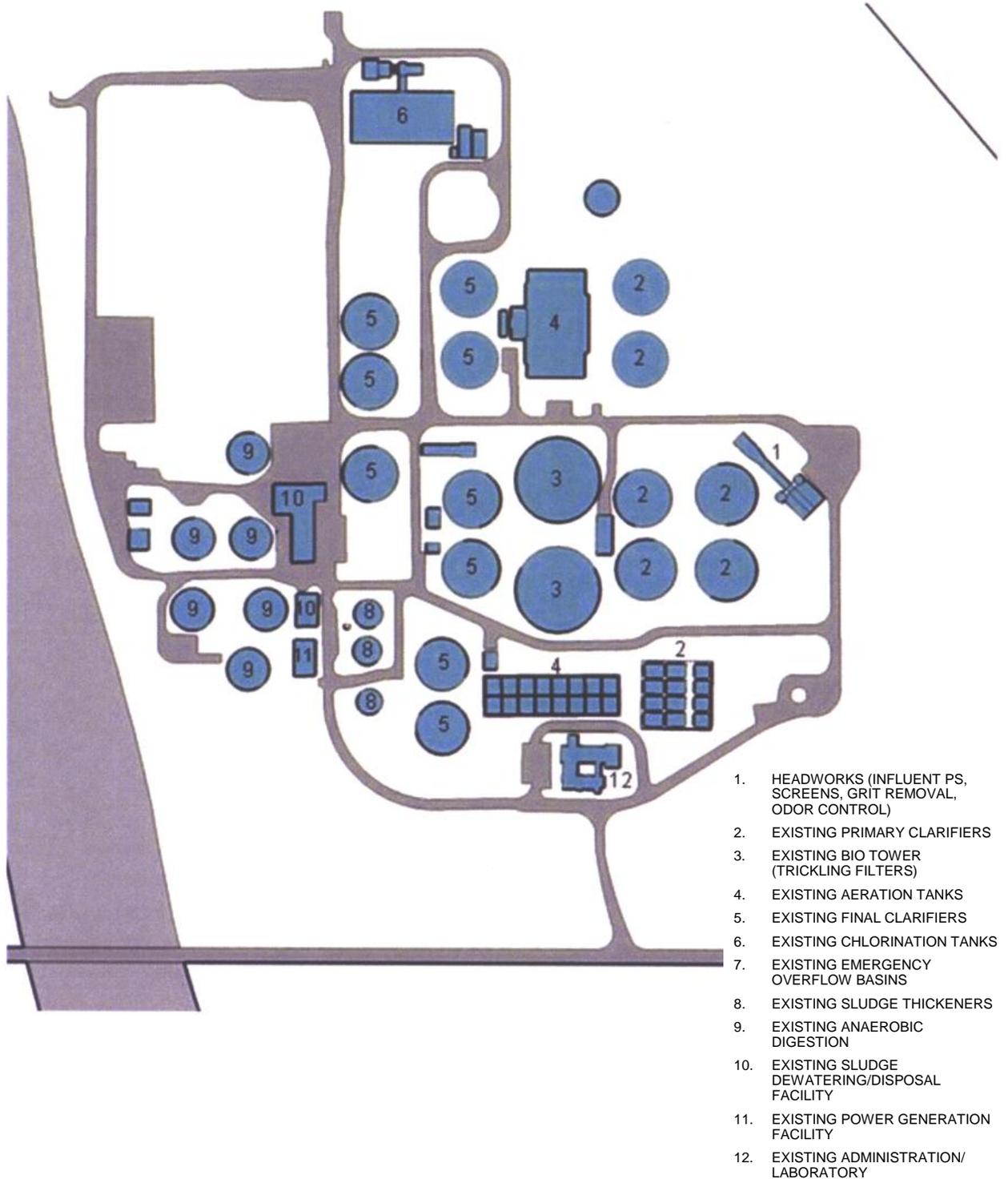
#### 3.1 Roger Road Facilities

A new Roger Road WRF plant without primary treatment is planned. The existing treatment facilities will be decommissioned and demolished once the new plant is operational. Major elements of the new Roger Road WRF include:

- New Influent Pump Station;
- New Screenings and Grit Removal Facility;
- New Aeration Tanks (configured in the Bardenpho Process);
- New Final Clarifiers;
- New Rapid Sand Effluent Filters (Optional);
- New Disinfection Facilities;
- New administration and ancillary facilities
- New WAS Thickening/Pumping Facility; and
- Demolish and Remove existing Roger Road WWTP after new GF Plant is operational.

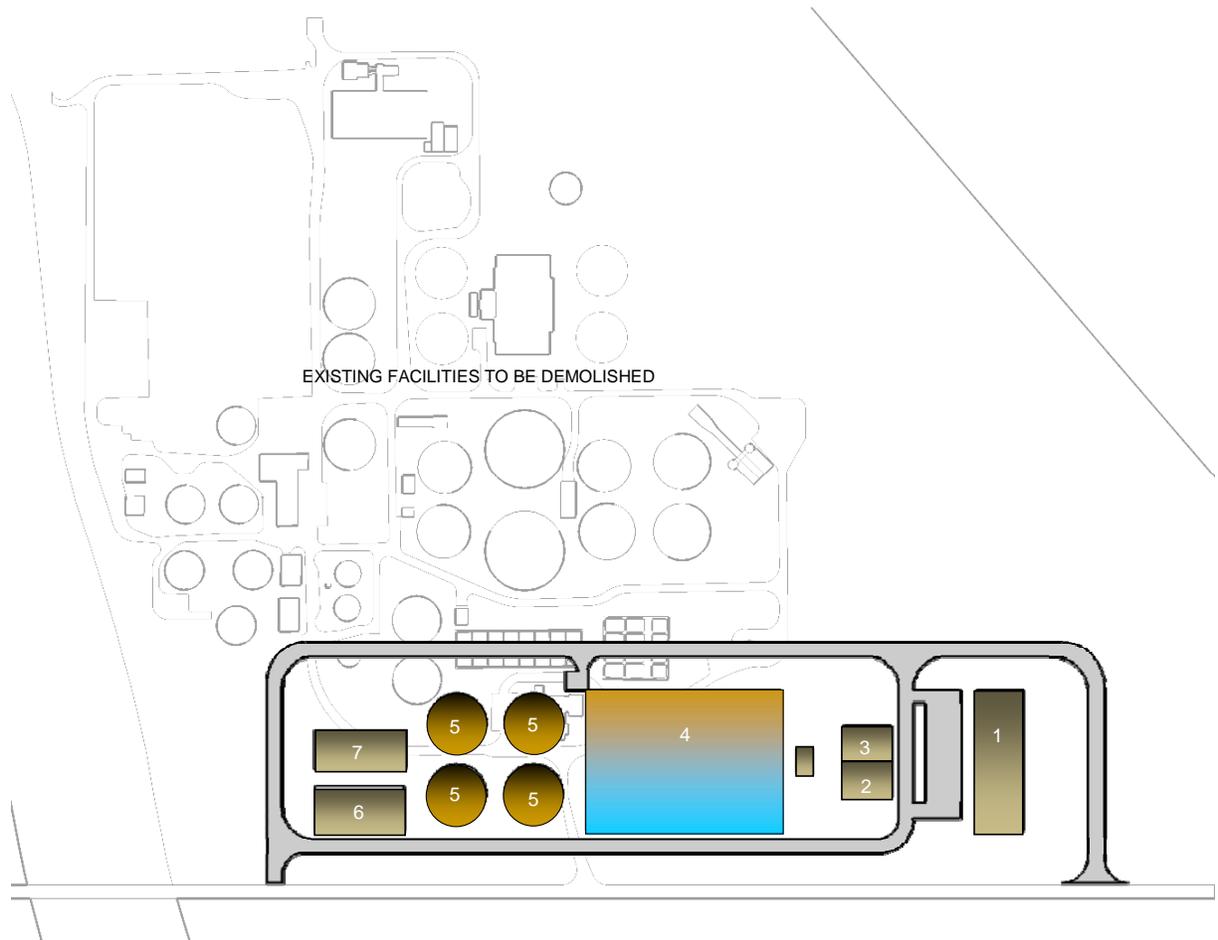
There is a “green space” on the south side of the existing Roger Road WWTP that is available to site a new facility to treat 24 mgd of wastewater. The recommended plan for future Roger Road WRF is to locate the facilities along Sweetwater Drive on the south side of the existing treatment facilities and west of the existing Tucson water reclaimed water filtration plant, reservoir and pumping station operations. The plan maximizes the availability of public land for alternative uses, such as a new sports complex, enables upstream discharge to the Santa Cruz River to sustain riparian habitat, and locates operations adjacent to the existing and future reclaimed water operation. The existing facilities will continue operations until the new facilities are commissioned and then the existing facilities will be demolished. A site plan of the existing Roger Road WWTP and the proposed new Roger Road WRF plant is presented on **Figure 3-1** and **Figure 3-2**.

**Figure 3-1**  
**Existing Roger Road WWTP Site Plan**



## Request for Expressions of Interest

**Figure 3-2**  
**Proposed Roger Road WRF Site Plan**



1. PROPOSED ADMINISTRATION FACILITY
2. PROPOSED HEADWORKS (INFLUENT PS, SCREENS)
3. PROPOSED GRIT REMOVAL FACILITY
4. PROPOSED BARDENPHO AERATION TANKS
5. PROPOSED FINAL CLARIFIERS
6. PROPOSED EFFLUENT FILTERS/DISINFECTION FACILITIES
7. PROPOSED SLUDGE THICKENING/TRANSFER FACILITY

## Request for Expressions of Interest



### 3.2 Ina Road Facilities

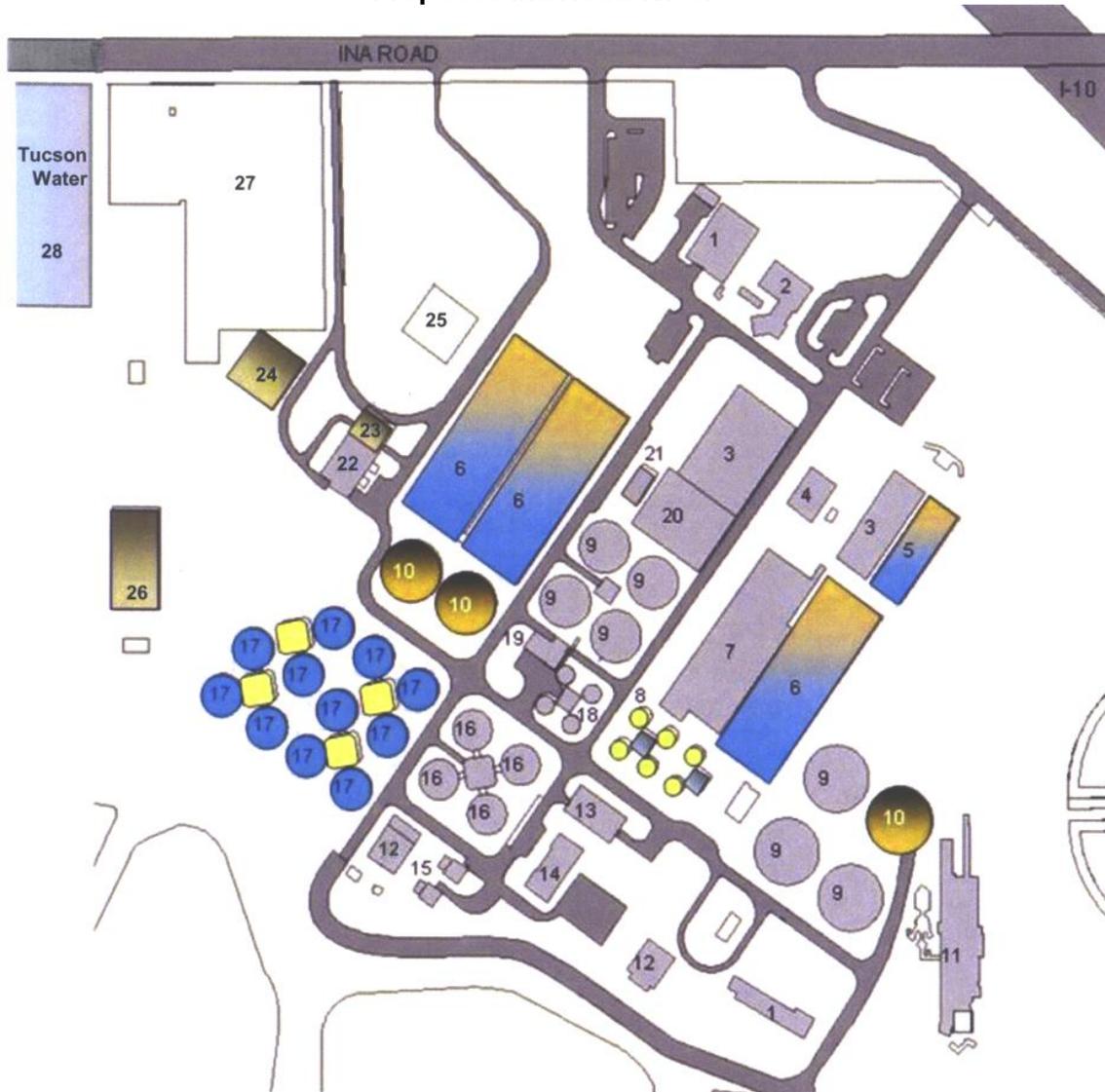
The draft ROMP recommends that the Ina Road WPCF facilities be expanded to accommodate the treatment of 50 mgd on the existing site. Major elements of the expanded Ina Road WPCF include:

- Additions to the existing headworks (pump station, screen and grit) facility;
- New Primary Clarifiers;
- Modifications to existing BNRAS (12.5 mgd) plant (reconfigured to the Bardenpho Process);
- New Aeration Tanks (configured in the Bardenpho Process);
- New Final Clarifiers;
- New Rapid Sand Effluent Filters (Optional);
- New Disinfection Facilities;
- Upgrade existing power plant or construct new facilities
- New Sludge Thickening, Anaerobic Digestion and Sludge Disposal Facilities; and
- Demolish and Remove portions of the existing High Purity Oxygen Plant after the new plant is operational.

At the Ina Road WPCF, there is sufficient space on the existing plant site to accommodate expansion to treat 50 mgd of wastewater. A site plan of the existing and proposed new facilities at the Ina Road WPCF is presented on **Figure 3-3**.

**Request for Expressions of Interest**

**Figure 3-3  
Proposed Ina Road WPCF**



- |                                  |   |
|----------------------------------|---|
| 1. WAREHOUSE                     | 15. CHLORINATION BUILDINGS              |
| 2. ADMINISTRATION BUILDING       | 16. EXISTING DIGESTORS                  |
| 3. EXISTING PRIMARY CLARIFIERS   | 17. NEW DIGESTORS                       |
| 4. NEW BLOWER BUILDING           | 18. EXISTING SLUDGE THICKENERS          |
| 5. NEW PRIMARY CLARIFIERS        | 19. EXISTING VACUUM FILTRATION BUILDING |
| 6. NEW AERATION TANKS            | 20. EXISTING ACTIVATED SLUDGE REACTOR   |
| 7. EXISTING AERATION TANKS       | 21. OXYGEN PRODUCTION                   |
| 8. NEW SLUDGE THICKENERS         | 22. EXISTING CENTRIFUGE BUILDING        |
| 9. EXISTING SECONDARY CLARIFIERS | 23. EXTENSION TO CENTRIFUGE BUILDING    |
| 10. NEW SECONDARY CLARIFIER      | 24. NEW GBT THICKENING BUILDING         |
| 11. HEADWORKS                    | 25. SLUDGE STORAGE BASIN                |
| 12. CHLORINE CONTACT BASIN       | 26. FILTER / DISINFECTION               |
| 13. ENERGY RECOVERY BUILDING     | 27. PIMA COUNTY INDUSTRIAL WASTE        |
| 14. TRAINING CENTER              | 28. TUCSON WATER                        |

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### 3.3 Power Facilities

The plant power generation system at Ina Road WPCF consists of seven 650 kW, 4160 volts, 3-phase generators connected in parallel to 4.16 kV Switchgear “A/B”. The power generators utilize biogas (primarily methane) generated on-site by anaerobic digestion of organic solids and natural gas supplied by the local utility. The production of methane gas will be increased in the future as the plant is expanded and the Ina Road WPCF becomes the centralized solids processing center. Switchgear feeder breakers distribute power to six outdoor unit substations and three 400 horsepower Oxygen Compressors. The unit substations are connected delta-wye with their secondaries rated 480-volts, 3-phase. The secondary of each unit substation serves a close coupled walk-in aisle 480-volt switchboard with the exception of the two at the Centrifuge Building. The Centrifuge Building unit substations serves a motor control center directly from the secondaries of the substation transformers. Those configured with secondary switchboards distribute power to motor control centers and other utilization equipment.

Since digester gas (methane) will not be available at the new Roger Road facility, it is expected that engine generators will be provided as backup power in the event of power outage in the power grid servicing the plant. This is forecast to be intermittent service. The fuel source would be fuel oil, natural gas or liquid propane.

### 3.4 Biosolids Services

#### 3.4.1 Existing Biosolids Processing

Stabilized Class B biosolids from both the existing Roger Road WWTP and the Ina Road WPCF are currently thickened to approximately 8 percent solids using centrifuges and are disposed of through an existing contract for agricultural land application. This disposal option is suited to thickened rather than dewatered solids as the water in the biosolids is beneficial in the region and the existing contractor’s equipment is consistent with this product up to 10 percent solids.

The current land application option has been successful for the County and provides a beneficial use of its biosolids. It is expected that land application will continue to be an option for biosolids disposal in the area in the future. However, some issues of concern with this disposal method have arisen. Currently, hauling distances for disposal are approximately 25 miles round trip and are through a single disposal contractor that controls the majority of available land in the area. It is expected that this hauling distance could increase to 40 miles at some point in the future as development pushes available land further out from the existing Ina Road WPCF. Concerns over the quality of Class B biosolids have arisen in other areas of the U.S. If similar concerns arise in the area, disposal of Class B biosolids by land application could become difficult or unacceptable, requiring Class A processing. As a result, the County is seeking additional options for disposal.

#### 3.4.2 Future Biosolids Processing

In order to provide reliable biosolids processing and disposal through the planning period, the following recommendations for biosolids processing improvements are made in the ROMP:

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- **Roger Road WWTP** (after construction and startup of new Roger Road WRF plant)
  - Decommission existing gravity thickeners and dissolved air flotation thickeners;
  - Provide waste activated sludge gravity belt thickening facilities with 4 gravity belt thickeners to produce a minimum of 3 percent solids;
  - Decommission existing digesters;
  - Improve transfer pump station facilities to transfer 3 percent waste activated sludge to Ina Road WPCF through the existing transfer forcemain; and
  - Consider providing redundancy to the single sludge forcemain through construction of a parallel forcemain.
  
- **Ina Road WPCF** (as part of the improvements and expansion to 50-mgd capacity)
  - Expand existing gravity thickening facilities for primary sludge at the same size as existing for a total of 4 gravity thickeners to produce 5 percent solids;
  - Provide waste activated sludge gravity belt thickening facilities with 3 gravity belt thickeners to produce a minimum of 5 percent solids;
  - Expand existing mesophilic digestion capacity with 5 additional digesters at the same size as existing;
  - Expand centrifuge facility to have 6 units (for 5 days per week operation) or 4 units (for 7 days per week operation) that can be operated to produce either thickened or dewatered solids;
  - Replace and expand centrate and cake pumping systems at the centrifuge facility;
  - If 5 days per week operation is desired for dewatering, provide digested sludge storage upstream of centrifuges;
  - Provide thickened/dewatered solids storage with storage capacity to hold 10 days of solids production; and
  - Replace existing solids transfer station.

Thus, it is recommended that the County continue to produce Class B biosolids using consolidated mesophilic digestion facilities at Ina Road. This stabilization process will provide digester gas for use at the plant. Additionally, thermophilic anaerobic digestion (TPAD), heat drying, or possibly the Cambi process (when and if approved by U.S. EPA for producing Class A biosolids) could be added in the future to produce Class A biosolids, if necessary. An arrangement has been determined for the required Class A TPAD facilities on the Ina Road site based on the conceptual sizing. Finally, the centrifuges will be designed to operate in either a thickening or dewatering mode that will permit the use of landfilling as a backup or contingency plan for biosolids handling.

### 3.5 Outlying (Smaller) Treatment Facilities

Areas outside the metropolitan Tucson region are served by what are called the outlying facilities. These outlying areas are experiencing a rapid population expansion. An evaluation to determine the optimal strategy for long-term flow/capacity management, wastewater treatment and facility expansion was performed.

The outlying region includes facilities operated by the Department and by others. Existing Department operated facilities include:

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- Arivaca Junction Wastewater Treatment Facility;
- Avra Valley Wastewater Treatment Facility;
- Corona de Tucson Wastewater Treatment Facility;
- Pima County Fairgrounds Wastewater Treatment Facility;
- Green Valley Wastewater Treatment Facility;
- Marana Wastewater Treatment Facility;
- Mt. Lemmon Wastewater Treatment Facility;
- Rillito Vista Wastewater Treatment Facility; and
- Randolph Park Water Reclamation Facility.

Treatment facilities for the outlying area must accommodate future projected average daily flows that are 250 – 3,000% greater than 2006 average daily flows. The following table shows current and future projected wastewater flows for the outlying facilities.

**Table 3-1  
Current/Projected Outlying Facility Wastewater Influent Flows**

Outlying Facility Name	2006	2030	Approximate Increase
Arivaca Junction	0.06	0	-
Avra Valley	1.08	3.0	300%
Corona de Tucson	0.14	2.1	1500%
Green Valley	1.76	4.4	250%
Marana	0.15	4.4	3000%
Mt. Lemmon	0.002	0.002	0
Pima County Fairgrounds	0	0	-
Rillito Vista	0.01	0	-
Southlands (excludes Corona)	0	10.5	-

The existing non-Department operated facilities include Arizona Sonoran Desert Museum, Sahuarita, and others.

The existing outlying facilities vary in capacity and treatment process employed. The ROMP investigated and evaluated outlying service areas and facilities with two major objectives:

- Opportunities to decommission smaller facilities and consolidate wastewater flows into area regional plants; and
- Opportunities to incorporate a single, or perhaps two, treatment processes as a standard for the outlying regional plants.

Outlying regions were developed to meet the following list of objectives:

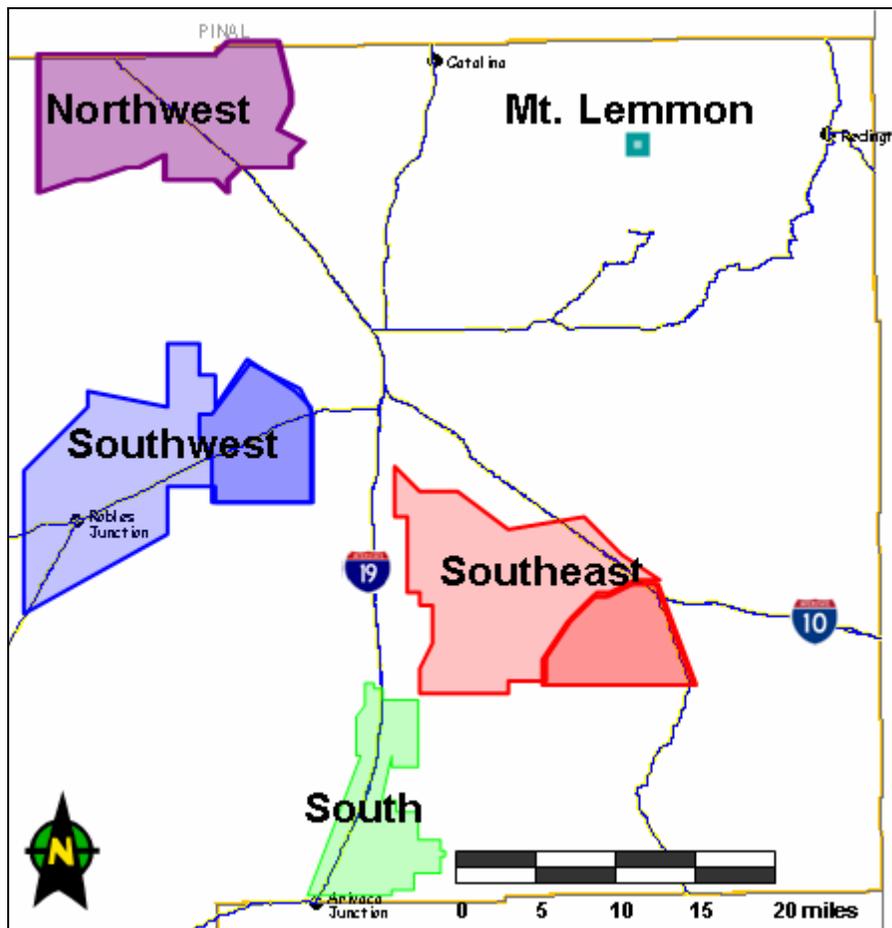
- Separate topographically confined areas;
- Convey wastewater via gravity;

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- Limit conveyance line distances;
- Avoid conveyance line construction in areas of sparse population; and
- Consolidate facilities to sub-regional treatment facilities.

Application of the above objectives to the planning area yields five regions, the Northwest, Southwest, South, Southeast, and Mountain Regions. The graphic below shows the five conceptual regions.

**Figure 3-4**  
**Non-Metro Service Area Regions Year 2030**



Construction of sub-regional facilities includes the option of locating, designing, and building new sub-regional facilities. This option would require construction of a new facility and subsequent decommissioning of the satellite facilities as their useful life expires. Conveyance structures would need to be constructed to include flows associated with new development as well as taking over decommissioned facility flows. Thus, all flows for the region would be treated at the new sub-regional facilities. Construction of a new sub-regional facility could potentially decrease construction operations and maintenance costs due to economies of scale. A new sub-regional facility would reduce the

## Request for Expressions of Interest

opportunity for areas near the existing outlying facilities to obtain water for water reuse by relocating the treated effluent at a distant area. This option would require all or some of the following steps listed:

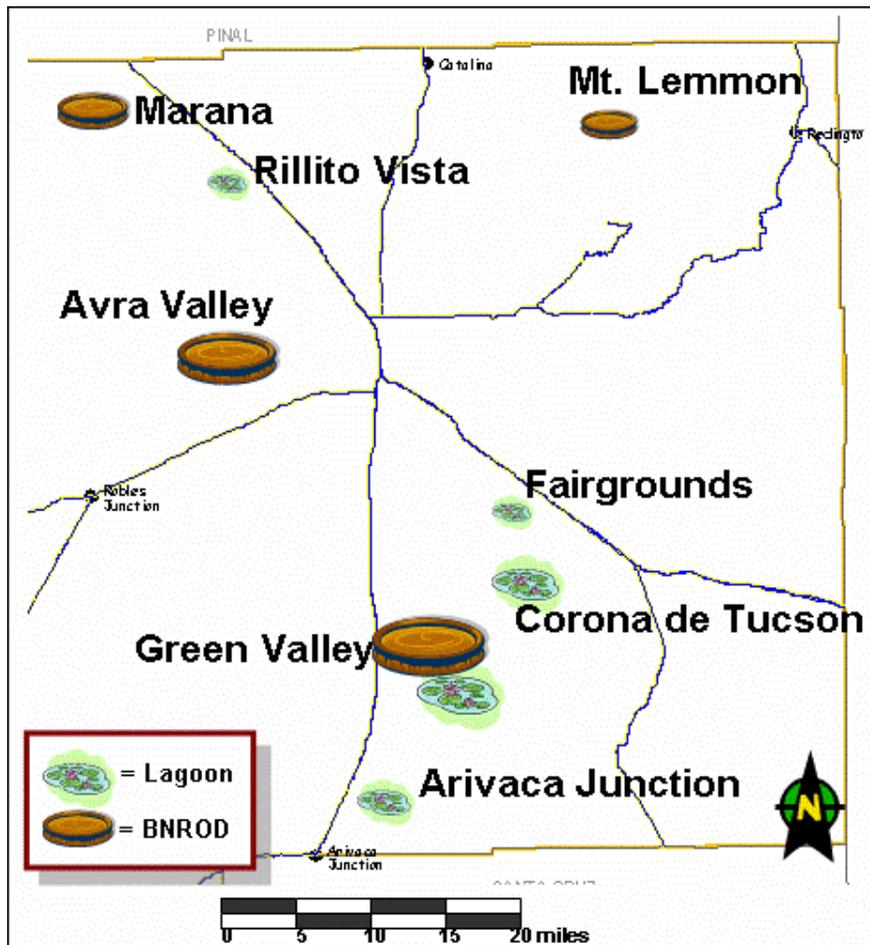
- Land procurement;
- New facility design and construction;
- Conveyance structure design and construction to convey flow from satellite facilities to the sub-regional facility; and/or
- Decommissioning of existing satellite facilities.

The ROMP includes evaluations for existing outlying facilities located within each region. The ROMP also provides recommendations regarding expansion, new construction and decommissioning of existing outlying facilities located within each region.

The evaluation for each Department operated outlying facility is set forth in **Appendix A**.

**Figure 3-5** shows the general location of Department's outlying facilities.

**Figure 3-5**  
**Department's Outlying Facilities**



## Section 4 Alternative Project Delivery Methods

### 4.1 Overview

Traditionally in Arizona, design-bid-build has been the generally used and legally required procurement method for public works. This project delivery method consists of two phases: a design phase and a bidding and construction phase. In the first phase, a design professional is hired, usually on a qualifications-based competitive selection process, to assist the County in planning and designing the project, and supervising (or managing) the bidding and construction processes. In the second phase, bids are solicited by the County from construction companies in accordance with a request for bids and the lowest responsible bidder is selected to construct the project. The County is responsible for managing the contracts of both the design professional and construction contractor throughout the entire process.

The State enacted omnibus legislation in 2000 that greatly expanded permissible project delivery methods. The Arizona public works procurement code is now among the most flexible in the country. Accordingly, Arizona law permits the County to consider the following project delivery methods:

- Traditional Design-Bid-Build;
- Design-Build;
- Design-Build-Finance (Turn-Key);
- Design-Build-Operate;
- Design-Build-Finance-Operate;
- Design-Build-Finance-Own-Operate; and
- Construction Manager at Risk.

The sections below summarize the primary alternative delivery methods that are presently allowed.

The County, to date, has for the most part employed the design-bid-build approach. It has recently begun to use construction-manager-at-risk contracting and, for smaller, job order projects, some design-build procurement. The County does not, however, have significant experience with design-build, design-build-finance, design-build-operate, design-build-finance-operate, or design-build-finance-own-operate procurements. This RFEI process has been undertaken as part of the County's effort to familiarize itself with how these other methods would work in Arizona as a practical matter, and to assess market interest.

In conjunction with the County's effort to familiarize itself with various alternative project delivery methods available for the Projects, the County is also exploring all public and private innovative options that are allowed and feasible under each of the alternative project delivery methods provided below. Questions relating to financing options and each of the alternative project delivery methods are provided below in Section 5.6.

### 4.2 Requests for Qualifications

Requests for qualifications are required to be issued by the County to commence an alternative project delivery process in Arizona. A selection committee reviews the qualifications submittals, and may elect to conduct interviews. Fee, price and cost information may not be solicited at the RFQ stage. The

## Request for Expressions of Interest

selection committee, applying the qualifications criteria, must select the three (and only three) most qualified firms to be interviewed for the specific project.

Arizona law permits the County, without conducting a subsequent RFP process, to enter into contract negotiations with the highest qualified firm from among the three firms selected through the RFQ process. The contract may encompass not only design services but also resident engineer and construction management / inspection services. Price, as well as terms and conditions, can be negotiated notwithstanding the absence of competing price proposals. If a reasonable agreement is reached, the County may execute it without further procedural steps. If agreement cannot be reached, the County can turn to the next highest ranked firm identified through the RFQ process.

### 4.3 Requests for Proposals

The County may elect, following the RFQ process, to conduct a competitive request for proposals process. The RFP must be issued to the three pre-qualified firms. Technical and price proposals are opened and scored separately, with the highest scored proposal selected. Clarifying discussions are permitted prior to the submittal of final technical and price proposals. A stipend must be paid to responsive but unsuccessful proposers in an amount at least equal to 2/10ths of one percent of the County's final budget for the project.

### 4.4 Design-Build and Related Project Delivery Methods

The State procurement code defines "design-build" as a project delivery method in which (1) there is a single contract for design and construction services; (2) design and construction may be in sequential phases or concurrent phases; and (3) finance services, maintenance services, operations services, preconstruction services, and other related services may be included. Thus the County has general legal authority to use the design-build, design-build-finance, design-build-operate, design-build-finance-operate and design-build-finance-own-operate project delivery methods.

Design-build and related procurements operate to create one point of responsibility for multiple services. They also operate to transfer design liability from the owner to the private contractor assuming full responsibility for construction and other services. These alternative project delivery methods are generally believed to have the potential to shorten the project schedule by allowing design and construction work to proceed in parallel. Cost savings and risk transfer are also generally regarded as achievable using design-build and related procurements, potentially at the loss of some degree of municipal control over design details.

### 4.5 Construction-Manager-at-Risk

Construction-manager-at-risk procurements are also authorized in Arizona. These are defined as a project delivery method in which there is a separate contract for design services and construction services (including preconstruction and design services). A contract for design services and a contract for construction services may be entered into and performed at the same or different times under this delivery method.

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Construction-manager-at-risk procurements do not generally operate to transfer design liability from the owner and its design engineer to the construction firm and other companies that are party to the transaction. Nor does this form of contracting work to transfer operating performance cost or risk to a private company. It does, however, permit the selection of a construction services firm on a qualifications basis and allow the construction firm to be involved in project design. Guaranteed maximum pricing is also possible, to be negotiated once the design is sufficiently advanced.

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### Section 5 Questions and Comments

The County is interested in respondent's answers to the questions set forth below as it formulates its approach to project implementation. The County recognizes that not all questions set forth below are relevant to each of the project delivery methods identified herein as potentially viable delivery methods. Please answer those questions that pertain to the particular delivery method or methods you are interested in or with which you have particular experience.

While we have attempted to group the following questions under general, topical section headings, please note that many of these topics will overlap. For example, many of the questions relating to the design-build method of project delivery apply equally to the design-build-finance, design-build-operate, design-build-finance-operate and design-build-finance-own-operate methods of project delivery. Accordingly, please review all of the following questions carefully and answer each of the questions that pertain to your preferred method or methods of project delivery.

Section 5.6 poses questions with respect to how innovative financing options may be incorporated into these project delivery methods.

#### 5.1 Preferred Project Delivery Method and Procurement Process

- In which projects are you interested?
- Which projects are appropriate for using the traditional bid-build method, and why?
- Which projects are appropriate for using alternative project delivery methods, and why?
- What is your preferred project delivery method for such projects, and why?
- Would you be interested in proposing on such projects under other delivery methods?
- Please give examples of the successful use of the preferred project delivery method in other projects within the industry.
- Are there delivery methods that you would caution the County against using for particular projects, and why?
- Based on your knowledge, how interested are contractors in breaking up large projects set forth herein into smaller project packages?
- Please comment generally on any particular issues of concern relating to the procurement processes to be employed under your preferred project delivery method or methods.
- What do you believe are the best means of obtaining the input of potential respondents as to the details of the process, terms and conditions of a County procurement? To what extent would the County benefit from issuing draft procurement documents to potential respondents for review and comment prior to the commencement of a formal solicitation?
- Arizona law authorizes a request for qualifications process that provides for the selection of a firm based solely on qualifications followed by negotiations with the firm to arrive at a fixed price or guaranteed maximum price. Alternatively, Arizona law authorizes the more common request for qualifications and request for proposals process enabling a short-listing of firms followed by a competition that includes price consideration. Please comment on the relative merits of the two alternatives based on your experience.
- Under the request for qualifications/request for proposals process authorized under Arizona law, the County would be required to pay a stipend or honorarium to "each final list offer or who provides a responsive, but unsuccessful, proposal." The statute provides that the amount of the honorarium or stipend shall be not less than two-tenths of one percent of the County's estimated

## Request for Expressions of Interest

final design and construction budget for the project. Please comment on the importance of such an honorarium or stipend in terms of your determination as to whether to submit a proposal for a project. What factors should guide the County in determining the amount of an honorarium or stipend?

- Please provide any recommendations you may have concerning the amount of time to be stipulated in a procurement schedule for preparation of statements of qualifications and proposals, review and discussions concerning statements of qualifications and proposals and for negotiating contracts.

### 5.2 Business Terms and Conditions Generally

- Please comment on the particular risks and business terms and conditions that you feel are, and are not, appropriate to assign to the private sector under various project delivery methods.
- Please comment generally on how the various project delivery methods might impact the amount of time that can reasonably be expected to be required for the design and construction of the particular projects under consideration.
- Please comment generally on how the various project delivery methods might impact the price estimates for the Projects included in the ROMP. What price estimate info will be provided ?
- Please comment on the issue of the “loss of control” by the County that is commonly asserted to be associated with alternative project delivery methods.

### 5.3 Construction-Manager-At-Risk

- How long after engaging the design-engineer should the County engage the construction manager?
- How can the construction manager best add design value to the project?
- What do you believe is optimal scope of work for the construction manager?
- Based on your knowledge, are construction managers willing to provide a guaranteed maximum price for the project? When? Under what conditions?
- To what extent, if any, do you believe that design liability (i.e., full responsibility for the facility’s ability to meet the performance standards following construction of the project in accordance with the design) can be transferred under the construction-manager-at-risk method of contracting?
- To what extent can the construction-manager-at-risk method of contracting reasonably be expected to shorten the project delivery schedule, reduce the project cost, or transfer risk with respect to the projects under consideration?
- What advantages do you believe that construction-manager-at-risk contracting have over traditional bid-build contracting?

### 5.4 Design-Build

- Are there wastewater treatment processes or technologies that you believe the County should consider for the projects, other than those identified in the ROMP?
- How can the County best strike the balance between the competing goals of assuring a well-built, high quality project that meets the performance standards and providing the potential contractors with the opportunity to develop competitive and innovative proposals that will provide the best value to the County? What would you recommend as to the extent of the design requirements to be included in a request for proposals for a design-build contract?

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- Please comment on the particular challenges posed by an upgrade to an existing facility, as opposed to a greenfield project, in the design-build context.
- Based upon your knowledge, how willing are contractors to assume permitting risk based on a project design that they have furnished (e.g., delays; terms and conditions, etc.)?
- Can design-build reasonably be expected to shorten the project delivery schedule, reduce the project cost, or transfer risk with respect to the projects under consideration?
- Based upon your knowledge, to what extent are contractors willing to propose, and for how long would they be willing to hold, a fixed price for a design-build project?
- Please outline your preferred approach to addressing risks associated with fluctuations in the prices of commodities and other materials in the context of a design-build contract.
- Please comment on the importance of including a limit of liability in a design-build contract and the nature and extent of any such limit.
- Please comment on today's surety market and how current surety bond procedures and practices could be expected to affect a procurement carried out using alternative project delivery.
- Based on your knowledge, are contractors willing to take any responsibility for the short-term operations after acceptance of the design-build project? How can the County be protected against the performance or cost issues that arise in the first two years of operations once the design-build work is completed?
- Please comment generally on the appropriate mechanisms for security for performance under a design-build contract, including parent company guarantees, performance bonds and letters of credit.

### 5.5 Design-Build-Operate

- Based upon your knowledge, to what extent are contractors willing to assume the “as-is” or “condition” risk in terms of operating and upgrading an existing facility?
- Is private operation of a project that is part of the System viable from the standpoint of the operational interface between the County and the design-build-operate contractor?
- Please describe how the County can best assure that, with a long-term contract, its facilities will be properly maintained and their value preserved. What approaches to facility maintenance have you found most effective in the context of the design-build-operate method of contracting?
- Please provide any recommendations you may have with respect to the structure of a fixed service fee for a long-term design-build-operate contract. What is the appropriate adjustment mechanism to account for inflation over the term of a design-build-operate contract? Are there particular operating and maintenance costs that you would recommend as “pass-through” costs for the County?
- Is the traditional “single guarantor” structure, whereby the operator or another single firm, guarantees performance of the entire design-build-operate contract viable in today's market place? Based upon your knowledge, how willing are contractors to consider participating in a procurement structure in this manner?
- Please provide any recommendations you may have with respect to alternatives to the “single guarantor” structure. One possibility might be to establish a “successor guarantor” structure, which would enable a “successor guarantor” (the operating company member of the proposer team) to assume all obligations and liabilities of an “initial guarantor” (the design-build entity) at a point following acceptance of the facility. Based upon your knowledge, how willing are contractors to consider participating in a procurement structure in this manner?

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- Based on your knowledge, how are the interests of the County’s existing operations and maintenance staff protected in the context of a design-build-operate contract?

### 5.6 Private Financing

- Please describe generally any extent to which you would recommend that private financing be incorporated into these transactions.
- Based upon your knowledge, how willing are contractors to undertake a private financing without having a federal tax beneficial ownership interest in the project?
- Is there any reason the County should consider having the project privately owned, as well as privately financed?
- Is private financing likely to advance, or delay, project completion?
- Based upon your knowledge, how willing are contractors to consider providing turnkey construction financing (where the County would “take-out” the financing upon project completion and acceptance), rather than permanent financing?
- Should the County allow proposals incorporating private project financing to be submitted by teams led by financial institutions (who subcontract the performance of the work to design, construction and operating services firms), or limit proposals to those led by design, construction or operating services firms who provide such services directly or arrange for project financing?
- If private project financing is provided by teams led by financial institutions, and equity is provided (with or without private ownership):
  - What would secure the project company’s contract performance to the County?
  - Would the County have any direct recourse to the operating services company in the event of non-performance?
  - How would the operational interface between the County and the project company work?
- Private project financing would generally be taxable (unless tax-exempt bond “volume cap” is obtained), resulting in a higher borrowing cost for the project, when compared to traditional tax-exempt municipal revenue bond financing. What other factors should cause the County to consider private project financing despite its probable higher cost?
- How would you suggest that the request for proposals and the service contract deal with the issue of interest rate uncertainty between the date the proposal is submitted and the date financing actually occurs, which will be sometime following execution of the service contract?
- Based upon your knowledge, how willing are contractors to “guarantee” that the financing will actually occur (in the sense of a guaranteed date for completion of financing) at a guaranteed interest rate, or a guaranteed “spread” over an interest rate index, with damages payable if the financing does not occur?
- Based upon your knowledge, if a contractor would not be willing to “guarantee” the occurrence of a financing, how could the County be assured that a “best efforts” financing would actually occur, and on what terms?
- If the County were to allow proposers full discretion to propose any type of financing plan, how would you suggest the financing elements of the proposals be compared?

## **Section 6 RFEI Submittals**

### **6.1 RFEI Response Format**

Respondents are requested to provide information that they believe will help the County in determining the optimal procurement approach for implementing each of the Projects. The response should focus primarily on input relative to the delivery methods being contemplated. Responses shall not be prepared as a statement of qualifications or a proposal for the Projects.

Respondents are requested to address the following, as detailed below:

- Respondent Information;
- Projects of Interest;
- Project Delivery Methods Commentary;
- Institutional, Contractual and Legal Considerations; and
- Economic and Financial Considerations.

### **6.2 Respondent Information**

The respondents should provide pertinent information about their company, including: name; address; business description; relevant experience; reference project information; brief organizational and financial profile; contact person or persons; contact information, including phone and fax numbers and email address; and website address.

Respondents may submit information individually or jointly with other interested parties or firms. Joint submissions will not be considered by the County to constitute any formal teaming arrangement.

### **6.3 Projects of Interest**

Respondents are requested to identify one or more of the Projects they may be potentially interested in pursuing, and the delivery method or methods they believe should be considered by the County to be most advantageous in implementing the particular Project.

### **6.4 Project Delivery Method Commentary**

Respondents are asked to comment on each of the project delivery methods of particular interest to them, and discuss the basis of their interest. Specific suggestions as to how these procurements should be carried out in practice under State procurement law are welcome. The advantages and disadvantages of the available procurement models, as they may be applied to the different Projects, should be discussed. Case studies, both of U.S. and international projects, can be usefully cited. The County is also interested in suggestions as to variants on the particular procurement models discussed in this RFEI.

### **6.5 Institutional, Contractual and Legal Considerations**

The County wishes to receive input on institutional, contractual and legal considerations bearing upon the development of the Projects. This input may include commentary on alternative project delivery practice

## Request for Expressions of Interest



in Pima County and Arizona generally; regulatory agency issues, such as the approach of permitting agencies to alternative project delivery and regulatory standards; intermunicipal matters, including reclaimed water allocation issues; the role of other institutions or organizations in implementing the ROMP using alternative project delivery; approaches to establishing a fair, equitable and efficient procurement process; and contract structuring issues, such as the allocation of risk and responsibility that would best serve the County's interests.

### 6.6 Economic and Financial Considerations

The County also is requesting input on economic and financial considerations. Economic considerations include how and why the cost of a Project may differ among the contemplated delivery methods, and information relative to "risk costing". Supporting information from specific case studies and references would be of particular value. Financial considerations should focus primarily on possible private financing approaches for the Projects and may include suggestions on innovative public financing approaches. Information regarding taxable versus tax exempt debt; equity; financing guarantees; revenue and collateral pledges; project ownership; and comparisons with traditional municipal bond issuance would be helpful.

### 6.7 Answers to Questions

Respondents are requested to answer the specific questions set forth in Section 5.0 of this RFEI, to the extent the questions relate to the respondent's experience and projects of interest. In lieu of answering such questions sequentially as presented, respondents may incorporate answers in the text provided in response to the general subjects raised in Sections 6.3, 6.4, 6.5, and 6.6 above. The County is interested in receiving commentary and suggestions in the manner each respondent determines will most effectively communicate its response to the matters raised in this RFEI and assist the County in its decision-making process.

## Request for Expressions of Interest

### Appendix A Outlying Facilities

#### Arivaca Junction Wastewater Treatment Facility (AJWWTF)

AJWWTF is located 3,080 feet above sea level (FASL) on the southern border of Pima County approximately 30 miles south of Tucson just east of Interstate 19. The facility has a permitted treatment capacity of 0.1 mgd (maximum daily flow average of 60,000 gallons per day) and treated an average daily influent flow of 0.059 mgd in 2006 (59% capacity). Treatment consists of a single 3.2-acre, 13-ft deep, unlined aerated facultative stabilization pond (side slope of 3:1) with two surface aspirating aerators/mixers. Effluent disposal for AJWWTF is through percolation, evaporation, and reuse. A reuse agreement for delivery of the Class C effluent for restricted agriculture use is in place with nearby Reventone Ranch. Prior to effluent being delivered to the adjacent ranch it is disinfected through the addition of sodium hypochlorite. Biosolids are scraped from one lagoon when necessary and hauled to a landfill.

AJWWTF is expected to close once construction of the gravity sewer line between AJWWTF and Green Valley WWTF is completed. Wastewater flow from AJWWTF will then be transported to Green Valley's facility for treatment. Completion of the gravity sewer line is scheduled for 2007/2008.

#### Avra Valley Wastewater Treatment Facility (AVWWTF)

AVWWTF is located 2,382-FASL in a rapidly growing area about 20 miles southwest of Tucson in southern Avra Valley, north of Hwy 86 (Ajo Way) and east of Three Points. AVWWTF treated an average daily influent flow of 1.079 mgd in 2006 (90% Current BNROD capacity, 67% of the expansion to 1.6 mgd total). Treatment consists of a Biological Nutrient Removal Oxidation Ditch (BNROD) and consists of a flow equalization basin, an oxidation ditch, two secondary clarifiers, four sludge-drying beds, and four percolation basins. Sewage enters the facility through a lift station where it is discharged to a screening channel. Influent is then equalized in a 0.37 million gallon basin and flows to a 1.33 million gallon oxidation ditch (1.2 mgd permitted treatment capacity). Effluent is disposed of through percolation, evaporation, plant irrigation reuse, and spraying into the Black Wash. Disposal of effluent to the Black Wash is only done when emergency flow conditions exceed percolation and evaporation capabilities. Waste activated sludge mixed liquors flow into the secondary clarifiers from the oxidation ditches via a distribution box where the sludge settles and further processes produce Class B+ effluent. The sludge from the clarifiers is then sent to two gravity thickeners and then to Roger Road WWTP. Four sludge drying beds are available for emergency use.

The Department's Avra Valley Expansion Plan recommends two concurrent expansion projects, the first is to increase current 1.2-mgd BNROD capacity to 2.2 mgd through interim improvements and the second is to have a dual oxidation ditch online and permitted to treat 4.0 mgd by 2009. Avra Valley also plans on treating effluent to Class A+ treatment requirements prior to discharge to percolation ponds.

#### Corona de Tucson Wastewater Treatment Facility (CdTWWTF)

CdTWWTF is located 3,090-FASL and is located approximately 15 miles south of Tucson in an area that is currently rural but facing very rapid population growth. The facility has a permitted treatment capacity

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of 0.300 mgd and average daily influent flows for 2006 were 0.135 mgd (45% capacity). Sewage enters CdTWWTF through a gravity interceptor, then through a Parshall flume flow-metering chamber. The sewage then flows into a series of “splitter manholes” dividing the flow between the two concrete-lined stabilization ponds of 3.3- and 3.7-acres with an average operating depth of 4-feet. Ponds can be operated in series or parallel. The treated water overflows from the stabilization ponds into the 10.2-acre evaporation pond with a 6.1-acre unlined soil aquifer transfer (SAT) pond used as a recharge basin. Effluent is discharged to the plastic lined evaporation pond. Biosolids are removed from the plastic lined evaporation ponds when needed.

Corona de Tucson WWTF will be placing a new, 1.0 mgd permitted, closed loop reactor online in 2007 to eventually replace the existing lagoons. The new facility will include new headworks, Parshall flume, RAS/WAS station, polymer storage, sludge holding tank, sludge pump, and mechanical/electrical/administration complex. Effluent will be disposed of via the SAT basins regulated by the facility’s APP. Biosolids will be pumped to the facility’s sludge holding tanks before being hauled and discharged into the South East Interceptor for processing and disposal at the Ina Road biosolids processing facility.

### Green Valley Wastewater Treatment Facility (GVWWTF)

GVWWTF is located 2,790-FASL south of Tucson along the east side of the Santa Cruz River. The facility’s 2004 expansion included the addition of a 2.0 mgd treatment train utilizing Biological Nutrient Removal Oxidation Ditch (BNROD) and increased the total permitted treatment capacity to 4.1 mgd (average dry weather flow). The facility treated an average daily influent flow of 1.764 mgd in 2006 (43% capacity). GVWWTF is split into two processes. The first, a 2.1 mgd Class B effluent producing process, consists of two trains of primary and secondary aerated lagoons followed by two effluent maturation/settling lagoons and four percolation basins. The second process, a 2.0 mgd BNROD Class A+ effluent producing process, operates on an extended aeration, nitrification, and denitrification process within the oxidation ditch by cycling the aeration on and off. Flows greater than BNROD’s capacity are directed to the aerated lagoons and polishing ponds. Effluent is disposed of through percolation, reuse, and delivery. Department has a contract to deliver up to 1 mgd of Class A+ and B effluent to Robson/Quail Creek Inc. GVWWTF is the only Outlying facility with biosolids treatment and disposal capacity. The sludge is thickened, digested, and dried (Class A biosolids) before being utilized as a mine tailing reclamation product at the ASARCO Mines.

GVWWTF will be treating flow from the Arivaca Junction WWTF once the gravity sewer main is completed (completion is expected in 2007/2008). Department is planning on decommissioning the aerated lagoon system and replacing the capacity with a similar 2.0 mgd BNROD process by 2010.

### Marana Wastewater Treatment Facility (MWWTF)

MWWTF is located 1,910-FASL one-half mile north of Marana Road, one mile west of Luckett Road, and one-half mile east of the Santa Cruz River. The facility has a permitted treatment capacity of 0.5 mgd and treated an average daily influent flow of 0.149 mgd in 2006 (30% capacity). The current wastewater treatment system includes a headworks and a 3-inch Parshall flume with a maximum capacity of 1.1 mgd (currently capacity is 0.7 mgd). To provide wastewater treatment for the accelerated development, three 0.05 mgd biological nutrient removal package plants began operation at the end of 2001 and a fourth was added in 2005 providing a treatment capacity of 0.2 mgd. The four package plants will be soon

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supplemented with a 0.5-mgd “Biolac” activated sludge treatment system, as an interim treatment process. Effluent is discharged into a 60 mil high density polyethylene (HDPE) lined effluent storage pond and disinfected with chlorine. The eastern facultative evaporation pond has been converted into a soil cement lined emergency influent storage basin. An in-ground biofilter is located onsite for odor control purposes. Effluent is reused onsite through landscape irrigation or for a riparian habitat restoration project. Class B+ effluent is produced through a Biological Nutrient Removal process and a chlorination and de-chlorination disinfection process. MWWTF collects sludge in sludge storage tanks before transporting to Ina Road for processing.

MWWTF’s service area is expanding to match the area’s growth and eventually the facility will require expansion to provide capacity for the increased wastewater flow. Possible flows for inclusion to Marana’s future capacity are the Rillito Vista WWTF and the Continental Ranch Pumping Station. Marana WWTF has finished design of a new 1.5 mgd Biological Nutrient Removal Oxidation Ditch facility. Construction should begin at a date allowing enough time for completion and startup/testing. Once construction is complete, the existing package plants will require evaluation to determine their remaining life and application for future projects. Plans have been mentioned to relocate existing package plants to a proposed Canoa Ranch Water Reclamation Facility south of Green Valley WWTF or as a provisional treatment for the Southlands area (Southlands area is discussed later).

### Mount Lemmon Wastewater Treatment Facility (MLWWTF)

MLWWTF is located 8,310-FASL near the small community of Summerhaven on Mount Lemmon, north of Tucson. The facility treats an average of 12,500 gallons per day and treated an average daily influent flow of 1,900 gallons per day in 2006 (average flow is just over 15% of capacity). MLWWTF consists of a circular oxidation ditch followed by chlorination-dechlorination units. The facility is the only treatment plant in the County experiencing freezing temperatures and is entirely enclosed. Treated effluent from the MLWWTF is disposed of via sprayfield irrigation onto forest vegetation, or is disposed of using underground pipelines leading to three combined outfalls; both are regulated by the facility’s AZPDES permit. Sludge is deposited into the County collection system (manhole 8716-03) for treatment at the Ina Road WPCF and further processing at the Regional Biosolids Facility.

Department, the County Department of Environmental Quality and the USFS are working together to develop the Mt. Lemmon Service Area Watershed Study and Wastewater Management Plan. This plan hopes to identify the conditions and circumstances existing in and around the Mt. Lemmon community, and the significant issues and challenges involved in planning wastewater systems for the future. Due to its location and limited service, MLWWTF will most likely continue to be a stand alone facility in the future.

### Pima County Fairgrounds Wastewater Treatment Facility (PCFWWTF)

The PCFWWTF is located 3,010-FASL approximately 18 miles southeast of Tucson at the county fairgrounds south of Interstate 10 and west of Houghton Road. The Fairgrounds has only measurable flow in the month of April when the Pima County Fair is held. The facility has a permitted treatment capacity of 0.035 mgd. PCFWWTF consists of two primary stabilization ponds and an overflow pond. Flow is split or directed into a stabilization pond via a manual splitter device. PCFWWTF does not discharge effluent. Biosolids are dried, scraped, and hauled to a landfill when necessary.

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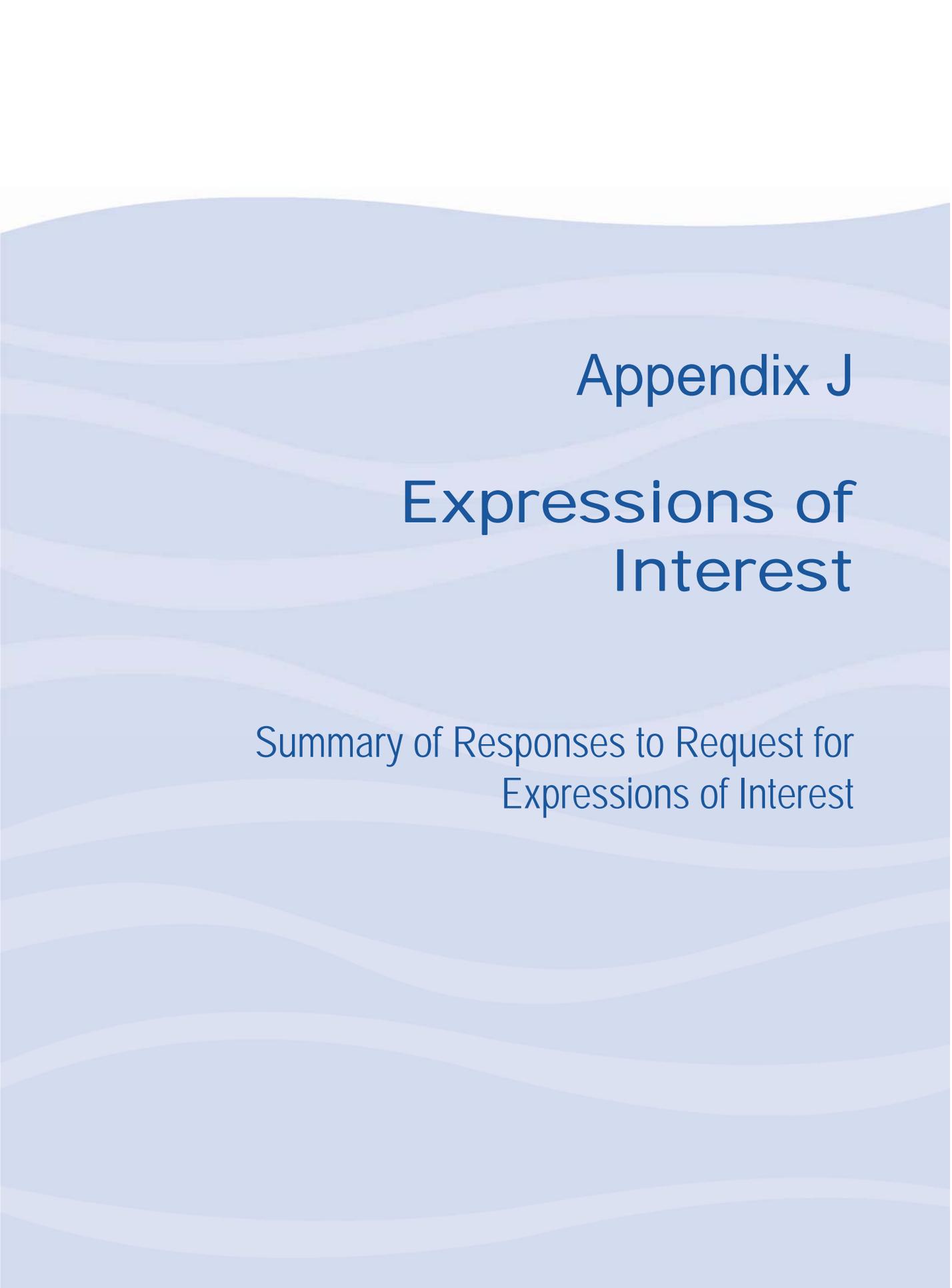


PCFWWTF can be decommissioned once a conveyance structure connecting the facility to the South East Interceptor, Corona de Tucson WWTF, or other location is completed.

### Rillito Vista Wastewater Treatment Facility (RVWWTF)

RVWWTF is located 2,130-FASL on land owned by Arizona Portland Cement, northwest of Tucson, between Avra Valley Road and Tangerine Road, and between Interstate 10 and the Santa Cruz River. The facility has a permitted treatment capacity of 0.02 mgd and treated an average daily influent flow of 0.012 mgd in 2006 (60% capacity). The treatment method for this facility consists of two stabilization/evaporation/percolation ponds. One pond is in use while the adjacent pond is dried and scraped before returning to service. The facility does not discharge effluent. Biosolids are dried, scraped, and hauled for disposal via landfill when necessary.

RVWWTF is operated by the Department on land leased from the Arizona Portland Cement Company and the facility decommissioning of the facility will be considered as soon as a conveyance structure connecting the service area to a facility for treatment is completed (Marana WWTF or Ina Road WPCF).



# Appendix J

## Expressions of Interest

Summary of Responses to Request for  
Expressions of Interest



**Pima County  
Wastewater Management Department  
Regional Optimization Master Plan**

**Summary of Responses to Request  
for Expressions of Interest**

October 2007



*In association with:*  
Hawkins, Delafield and Wood  
Raftelis Financial Consultants, Inc.

**Summary of Responses to  
Request for Expressions of Interest**

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## Summary of Responses to Request for Expressions of Interest

### 1. Introduction

The County received an overwhelming response to its Request for Expressions of Interest (RFEI) concerning the Metropolitan Wastewater Treatment System Capital Improvement Program (CIP). Twenty-seven firms submitted responses addressing the issues raised in the RFEI, including the method of project delivery, private financing, biosolids disposal, biogas and bio-power and additional technical considerations. Generally, the responses are very well thought-out, offer valuable information for the County to consider as it begins to implement the CIP, and indicate a strong interest on the part of the engineering and construction contracting industry to participate in the Pima County CIP.

### 2. Respondents

Respondents are grouped into categories solely for ease of reference and discussion of the comments offered. Placement of a firm into a particular category should not be viewed as limiting the scope of that firm. In actually many firms can fit into more than one category and their responses crossover into various other issues addressed in the Request for Expressions of Interest. The seven categories used for classifying the respondents are:

- 1) Engineering Design Firms,
- 2) Construction Firms,
- 3) Design/Build Firms
- 4) Design/Build/Operate Firms
- 5) Financial Firms
- 6) Biosolids Firms, and
- 7) Biogas/Bio-power Firms.

Specific respondents under each of these categories are:

- Engineering Design Firms include: Brown and Caldwell, Carollo Engineers, P.C., Kennedy/Jenks Consultants, and Malcolm Pirnie, Inc.
- Construction Firms include: Kiewit Western Co., McCarthy Building Companies, M.A. Mortenson Company, Sundt Construction, Inc., and Western Summit Constructors, Inc.
- Design/Build Firms include: AMEC Infrastructure, Inc., Black & Veatch, MWH Constructors, Inc. and Parsons Water & Infrastructure Inc.
- Design/Build/Operate Firms include: CH2M Hill, EPCOR Utilities Inc., GE Water and Process Technologies, PCL Construction, Inc., Severn Trent Services, and Veolia Water North America - West, LLC.
- Financial Firms include: Goldman, Sachs & Co. and Lehman Brothers Inc.
- Biosolids Firms include: Synagro-WWT, Inc., Biochem Resources (formally known as FKOS Resources, LLC), Fenton Environmental Technologies, Inc. and Sweet Ethanol, LLC.



## Summary of Responses to Request for Expressions of Interest

- Biogas/Bio-power Firms include: NZ Legacy, LLC. and APS Energy Services

### 2.1 Comprehensive Responses

While the majority of the responses to the RFEI provided valuable information for the County's consideration, Black & Veatch, Parsons Water & Infrastructure Inc., CH2M Hill, EPCOR Utilities, Inc., Veolia Water North America – West, LLC, and Lehman Brothers Inc. provided the most comprehensive responses. These respondents offered extensive discussion concerning the wide array of issues raised in the RFEI and each indicated that they would consider proposing on one or more of the projects included in the CIP.

### 2.2 Certain Non-Respondents

Several noteworthy industry players did not respond to the RFEI, including American Water, Southwest Water, and the engineering firms of Metcalf & Eddy, CDM, and HDR. However, it is important to note that, as specifically indicated in the RFEI, submitting a response is not a precondition to future participation in the CIP projects. Accordingly, these firms may still propose on the projects included in the CIP when the formal procurements commence.

## 3. Project Delivery Considerations

Critically important information offered by the respondents with respect to the various methods of project delivery is summarized in the following.

### 3.1 Traditional Design-Bid-Build

Market Interest. Most of the Engineering Design Firms, Construction Firms and Design/Build Firms indicated some level of interest in pursuing projects included in the CIP on a traditional, design-bid-build basis. While a few of the respondents indicated that bid-build would be appropriate for all of the projects included in the CIP, most of the respondents suggested that it would be appropriate only for smaller, well-defined projects (e.g., projects valued at less than \$10,000,000). Both PCL Construction, Inc. and Kiewit Western Co. cited the demolition of Roger Road as suitable for design-bid-build approach due to the straightforward nature of the project. Most respondents indicated that some form of alternative project delivery would be preferable for the projects included in the CIP and a few specifically cautioned against the use of the design-bid-build method for any of the projects included in the CIP.

Advantages. The primary advantages cited by respondents with respect the design-bid-build method relate to the familiarity with the approach, both from the perspective of the County and the engineering and construction contracting industry. For example, Kennedy/Jenks Consultants noted the County's "long-term experience with and well-defined procurement documents for this delivery method". AMEC Infrastructure, Inc. noted the lower risk profile associated with design-bid-build from the perspective of engineers and contractors when compared to alternative project delivery methods and suggested that most firms are primarily focused on delivering under this conventional method. Other firms emphasized the greater level of control the County would have in proceeding under the traditional design-bid-build method as compared to the alternative methods of project delivery.



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Disadvantages. Most firms indicated that the design-bid-build method is not appropriate for projects of the size and complexity of the major projects included in the CIP (i.e., Roger Road new Water Reclamation Campus and Ina Road WPCF upgrade and expansion). Respondents noted that the County would assume primary responsibility for project outcomes and performance under the design-bid-build method. Specific disadvantages indicated include the lack of design phase assistance or collaboration from construction professionals, an extended project timeline, late stage establishment of price, potentially adversarial relationships and a greater risk of claims and disputes than under the alternative project delivery methods. Kiewit Western Co. highlighted the higher cost that could be expected to be incurred under the design-bid-build method. According to CH2M Hill, “If the County is concerned about the quality of hard-bid contractors or the local construction market is saturated with work, [the design-bid-build] approach may not result in the lowest cost or best quality.”

Special Considerations. One Engineering Design Firm (Kennedy/Jenks Consultants) noted that the County’s recent experience with design-bid-build has been less than satisfactory. The firm’s recommendation was to include a contractor prequalification step in the procurement process. While Arizona State law appears to preclude such a prequalification step in the design-bid-build process, it may be possible to factor in the qualifications of the bidding companies through careful drafting of the procurement documents. More generally, the comments of the respondents suggest that design-bid-build can be successful when design documents are accurate and complete, a quality construction contractor is obtained and the County procures experienced construction oversight.

### 3.2 Construction Manager-at-Risk

Market Interest. The Construction Manager-at-Risk (CMAR) method of project delivery was generally favored over the bid-build method by the Design/Build Firms, Construction Firms, and Engineering Design Firms. Particularly, these firms indicated that the Ina Road project would benefit from the CMAR method due to the complexities associated with upgrading an existing facility and the need to maintain operations during the construction of the project.

Advantages - General. Respondents emphasized the ability to select a construction manager based on qualifications (rather than price) and the ability of the construction manager to collaborate with the design engineer in the development of the design as the primary advantages associated with the CMAR method. Respondents suggested that these factors combine to foster team building and collaborating, which can lead to common goals and objectives among the members of the project team. The construction manager adds value by performing constructability reviews, cost estimating and value engineering throughout the design and through project management during the procurement of subcontractors, project permitting, construction, start-up and commissioning. The construction manager assumes quality assurance control during construction and is generally responsible for all construction issues. Respondents indicated that collaboration between the construction manager and the design engineer generally results in fewer change orders over the course of construction. Respondents also noted that the CMAR method provides the owner with significant control over the design of the project, as the owner will generally have design approval rights at each development stage.

Advantages - Cost. A few respondents suggested that the CMAR method could achieve cost savings over the design-bid-build method through schedule optimization and constructability reviews by the



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construction manager. According to McCarthy Building Companies, “The CMAR team reviews design documents for constructability and bidability before soliciting bids to eliminate unclear or inconsistent details, thus reducing the possibility of change orders during construction. They provide value analysis, suggesting materials or equipment that might be more cost effective.” Respondents also noted that the CMAR method provides for the transfer of price risk at the point of the establishment of a guaranteed maximum price (GMP) through negotiations with the construction manager and indicated that the County could benefit from a negotiated sharing of any savings against the GMP. As compared to the design-bid-build method, respondents indicated that the CMAR method might provide for earlier price certainty depending on when the GMP is established.

Advantages - Schedule. A few respondents suggested that the CMAR method reduces the risk of schedule delays and change orders. More generally, respondents indicated that schedule efficiencies could be achieved under the CMAR method where there are identifiable portions of a project that can be phased to allow for early procurement of long-lead equipment and materials, early utility relocation and commencement of construction prior to completion of design.

Disadvantages - No Transfer of Design Liability. Respondents were uniform in stating that the CMAR method does not provide for the transfer of design liability. Under the CMAR method, the County remains ultimately responsible for process risk and has no single point of responsibility for all project issues. While the County may look to the construction manager for issues relating to the construction of the project, the County must look to the design engineer for issues relating to the design of the project and will ultimately be responsible for disputes between the construction manager and the design engineer.

Disadvantages – Cost and Schedule. Some of the respondents indicated that the CMAR method is not likely to result in significant cost savings. In fact, one Engineering Design Firm (Kennedy/Jenks Consultants) indicated that owners typically pay a premium for the CMAR method, which may only be offset through cost saving design refinements and minimal construction period claims. Another (Kiewit Western Co.) indicated that while the CMAR method may provide the best value, it would not necessarily provide the lowest cost.

Most of the respondents who offered information concerning the CMAR method emphasized that, while a GMP can be negotiated at any point from 30% design to 100% design, establishing the GMP later in the design process (i.e., from the 60% to 100% design) reduces the risk of uncertainty and enables the construction manager to obtain more competitive pricing from subcontractors. According to MWH Constructors, Inc. who advocated establishing the GMP only at the 70% to 100% design stage, “the increased certainty and detailed design allows the construction manager to pass reduced pricing risk to the subcontractors and, subsequently, a lower overall cost back to the owner.” Other respondents noted that establishing the GMP at an earlier design stage increases the contingency amount that the construction manager will include in the GMP. Accordingly, the comments of the respondents suggested a tradeoff between early stage price certainty and cost savings under the CMAR method: in order to avoid paying a high contingency, the owner must wait until the design is significantly developed before negotiating the GMP. According to CH2M Hill, “One of the problems that we have seen numerous times in construction-management at-risk is that while the construction manager might provide estimating input during design, they do not typically provide a firm price until the design is at least 90 percent complete. There can then be ‘sticker shock’ when this firm price finally appears.” Black & Veatch further noted



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that the need to have a significantly developed design prior to negotiating the GMP means that the CMAR method currently offers little schedule relief.

Special Considerations – Early Engagement. Nearly all of the respondents who discussed the CMAR method emphasized the need to engage the construction manager as early as possible in the process, with some suggesting concurrent engagement with the design engineer and others indicating that the construction manager should be engaged at no later than 60% design. According to Carollo Engineers, P.C., “By engaging the CMAR early in the project, the Owner is able to take advantage of what the CMAR process promises to deliver. Early understanding of the project elements allows contractors to develop accurate cost models and schedules that provide for cost control throughout the design phase of the project.” Other respondents indicated that the construction manager’s ability to influence the final design and cost drastically reduces beyond the 30% design stage.

Special Considerations – Negotiating the GMP. In addition to the timing issues discussed above with respect to the negotiation and establishment of the GMP, a few respondents emphasized the need to establish a list of assumptions and clarifications defining the scope of the GMP. Kiewit Western Co. suggested that contingencies should be based on a detailed set of unknowns rather than a percentage of the GMP. Parsons Water & Infrastructure Inc. noted that the GMP contingency must be controlled by the construction manager and emphasized that the construction manager’s contingency should not be viewed to cover risks that the owner contractually assumes, such as project scope or differing site conditions. Parsons also indicated that a construction manager may seek contractual protection from such risks as aberrations in the price of construction materials and supplies if the length of time between GMP and construction is such that the construction manager’s contingency could not adequately address the risk.

### 3.3 Design/Build

Market Interest. Respondents indicated significant interest in pursuing the projects included in the CIP on a design/build basis. As a general matter, the Design/Build and Design/Build/Operate Firms suggested that this method would be superior to either design-bid-build or the CMAR method, as design/build can be expected to shorten the project delivery schedule, reduce project costs and transfer the basic risks associated with whether a project will work to the design/build contractor. Particular interest was expressed in pursuing the new plant at Roger Road on a design/build basis.

Implementing Design/Build. The respondents offered a great deal of commentary concerning the best means to implement a project on a design/build basis. Many firms advocated for the implementation of design/build projects on a “single step” procurement basis where the design/build contractor (either a single firm or a team comprised of an engineer and a construction contractor) is selected on a qualifications basis without consideration of price. The selected design/build contractor then works with the owner to develop the project scope and design. As under the CMAR method, the owner and the design/build contractor negotiate a lump sum price or GMP when the project scope and design are sufficiently developed. However, in contrast to the CMAR method, once the lump sum price or GMP is established through the negotiation of the design/build contract, the design/build contractor assumes full responsibility for price, schedule, and project outcome.

This implementation method (single step design/build) differs significantly from the more common “two-step” design/build implementation process involving a request for qualifications (RFQ) to pre-qualify



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potential design-build contractors (up to three under Arizona State law) followed by a request for proposals (RFP), which provides for competition on price and non-price factors (including design). Under the two-step design/build process, the parties negotiate and establish a fixed price at the outset upon execution of the design/build contract based on the design/build contractor's proposal, which generally includes a 20-30% design. The advantages, disadvantages and special considerations associated with these different methods for implementing a design/build project, as indicated by the respondent comments, are addressed separately below.

Advantages and Special Considerations— Two-Step Design/Build. The respondents generally indicated that the two-step design/build process has the advantage of early price certainty, with the price known and fixed at the 20-30% design stage. Respondents indicated that this method, when compared to design-bid-build, CMAR or the single step design/build method, offers a greater opportunity for cost reduction through innovation and competition. Other advantages noted by the respondents include the fact that the design/build contractor serves as a single point of responsibility for price, schedule and performance outcomes, that the owner is removed from potential disputes between the engineer and construction contractor, and that the design liability is effectively transferred to the design/build contractor.

Generally, where the owner strikes the appropriate balance between ensuring a well-built, high quality project and providing for adequate opportunity for competition and innovation in the proposal process, innovation can result in lower capital and operating cost and improved performance. Respondents indicated that this can be achieved where the owner has a clear project definition, is comfortable with a performance-based selection and there is little chance of unforeseen circumstances or owner-directed change orders during construction. Particularly, respondents emphasized that the RFP should include performance-based requirements and minimal specific equipment or process specifications. According to Veolia Water North America - West, LLC, "For a municipality to benefit the most from design-build procurement, it must ensure it doesn't over design the initial plans prospective proposers will bid to... To develop creative proposals from DB team, the municipal entity should go out with a 10 percent or PDR (preliminary design report) level of design in order to get a spectrum of ideas from the proposer field." Similarly, Parsons Water & Infrastructure Inc. noted that "If an owner requires 30% or more design then a traditional project approach may be best suited for the project. Design build projects should be based on design that is less than 30%; more in the 10%-20% rang[e] to ensure maximum proposer flexibility and creativity." Overall, respondents indicated that opportunity for innovation and creativity, achieved through a properly structured, performance-based RFP process, can result in lower project costs for the owner.

Disadvantages and Special Considerations— Two-Step Design/Build. The primary disadvantages cited by the respondents with respect to the two-step design/build method are loss of control by the owner over design development and the cost of the procurement from the perspective of the proposing firms and, to a lesser extent, the owner. Respondents indicated that an owner under a two-step design/build process might experience some loss of control over the design of the project because, as suggested above, the design/build contractor will propose based on performance requirements and minimal specifications. This loss of control is the tradeoff associated with allowing a flexible, performance based approach, which enables proposing firms to develop innovative and creative proposals resulting in lower overall project costs to the owner. While the owner reviews design packages as the design progresses, the scope of the review is limited to whether the package complies with the parameters (design requirements) identified in the RFP and finalized in the design/build contract. The owner does not have approval rights



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with respect to the design, as it does under the bid-build and CMAR method, except to the extent that design packages or suggested design changes do not comply with the specified design requirements. For this reason, it is critical that the owner establish clear design requirements in the RFP documents and subsequent design/build contract based on specific project goals and objective and measurable criteria. A few respondents suggested that the more time that the owner spends in this effort, the less risk the owner has in loss of control over design. However, some respondents suggested that this required up front effort could be costly to the owner, as the owner must generally hire consultants to assist with the project definition and the development of the procurement documents.

The primary cost concerns suggested by the respondents with respect to the two-step design/build method relate to the costs that the proposing firms incur in preparing competitive proposals. Cost concerns include not only the actual cost of preparing the proposal, but also the opportunity costs associated with committing resources to a project for an extended duration where the firm may not ultimately be successful. The actual costs of preparing a proposal are generally only partially offset by an honorarium or stipend. Respondents indicated that these cost concerns could have the effect of limiting the number of firms who will respond in the two-step design/build process. To mitigate these concerns, respondents suggested that the County should attempt to shorten the procurement process and streamline the submittal requirements. According to Parsons Water & Infrastructure Inc.:

“The amount of resources that a proposer will be asked to invest on a particular project must be taken into account. There is an alarming trend taking place in the alternative project delivery market whereby procurements are taking longer and costing more. This trend is impacting the level of competition, as proposers are making investments in business opportunities that they determine represent a commensurate level of business development dollars with the project. Procurement requirements have risen to the point of proposers asking, ‘Is this really needed to make a selection?’ An owner is well advised today to carefully look at schedule and proposal requirements, as it now has to develop a procurement that is attractive to the proposing community or else those proposers will look at other opportunities.”

Advantages and Special Considerations- Single Step Design/Build. Many respondents suggested that the single step design/build method, also referred to as “progressive”, “QBS”, “collaborative”, “negotiated” or “sole source” design/build, addresses some of the disadvantages associated with the two-step design/build method. As discussed above, the single step design/build method provides for a qualifications based selection of the design/build contractor followed by a collaborative effort by the owner and the selected firm on project scope and design. The selected firm is paid currently for its work with the owner in the development of the design. At the point where the design is sufficiently developed (50-60%), the owner and the selected firm negotiate the design/build contract. If negotiations are unsuccessful, the project can be completed on a bid-build basis. If the parties are able to negotiate a design/build contract, the design/build contractor completes the design, performs certain “general conditions” services and generally self-performs 10-20% of the construction work, with the remaining 80-90% of the construction work competitively bid.

According to many of the respondents, this process reduces the up-front procurement costs of both the owner and the design/build contractor and enables the owner to exert control over the design process through collaboration with the selected firm over the development of the design. Respondents also suggested that this process fosters a collaborative and cooperative relationship between the design/build contractor and the owner and reduces contingency pricing by the design/build contractor, since the fixed



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price or GMP (including both the selected firm's fee and the competitively bid work) is negotiated based on a well-developed design (again, generally 50-60%). A few respondents noted that this process might attract more competitors due to the reduced costs associated with proposing on a qualifications-based procurement as opposed to the qualifications and price-based procurement contemplated by the two-step method.

Disadvantages and Special Considerations- Single Step Design/Build. Potential drawbacks associated with single step design/build include a lack of competition with respect to both design and price. The single step design/build method eliminates competition over the design of the project, thus limiting the opportunity for innovation and creativity that is generally associated with the proposal competition under the two-step design/build process. With respect to price, as noted above, the work involved in developing and completing the design and performing the general conditions services, as well as the work that the design/build contractor self-performs, is negotiated on a sole source basis. The owner is left without a competitive baseline with which to measure the reasonableness of the price offered by the selected firm. Moreover, the more work the design/build contractor proposes to self-perform, the less the amount of competitively bid work.

It should also be noted that the single step design/build process might not achieve the purported transfer of design liability that is considered a key benefit of design/build contracting. Under the normal, two-step design/build process, the transfer of design liability is based on the fact that the design/build contractor assumes full responsibility over the design. The single step design/build process might serve to negate this transfer of design liability because the owner assumes an approval role in the development of the design. This issue highlights the fact that the single step process is a relatively new method for implementing design/build without significant precedent in Arizona.

Special Considerations - Design/Build and Initial Operations. Respondents generally indicated that design/build contractors would not accept responsibility for short-term operations after achieving "acceptance" of the project. The prevailing view appears to be that operations are outside of the core competencies of design/build contractors and, as such, responsibility for operations should transfer to the owner after the successful demonstration of acceptance, which should assure the owner of the proper design and construction of the project. The respondents also noted that design/build warranties cover structure and equipment, but do not cover operations or performance following acceptance. A few respondents suggested that the County should consider design/build/operate if it is concerned about performance and cost issues following acceptance.

### 3.4 Design/Bid/Operate

Market Interest. The Design/Build/Operate Firms expressed considerable interest in pursuing the major projects in the CIP on a design/build/operate basis. Particular interest was expressed concerning pursuing the new plant at Roger Road on a design/build/operate basis.

Advantages. Design/Build/Operate Firms generally indicated that design/build/operate has the advantage of combining long-term operation guarantees (cost and performance) with the advantages discussed above concerning design/build. The design/build/operate contractor serves as the single point of responsibility for all aspects of design, construction and operations and can achieve efficiencies in design by



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considering both construction feasibility and operational efficiency. The owner is not responsible for disputes between the designer, builder and operator.

A few firms indicated that design/build/operate generally results in lower project costs and better outcomes than under the design/build method or other forms of alternative project delivery due to improved life-cycle costs, efficiencies and innovation. Specifically, CH2M Hill responded that the efficiencies inherent in design/build/operate transactions provide the best opportunity to ensure that the lowest life-cycle project costs are obtained and that the performance guarantees that are made are met for the promised operating cost. Design/build/operate can provide long-term operating cost guarantees, long-term performance guarantees and the transference of capital maintenance on a long-term basis.

Disadvantages. Two key concerns with design/build/operate are the limited number of design/build/operate contractors that can pursue large projects nationally and the perceived loss of control by the owner. Some respondents noted that the agreement structure can minimize the loss of control experienced by an owner. Epcor's response indicated that "well structured agreements give local government more control over the quality of services" through: (1) clear performance measures; (2) enforcement provisions and financial penalties for non-compliance; (3) government retention of policy and legislative power to regulate the provision of services; and (4) the separation of operations and the regulation of operations, which better ensures enforcement.

Special Considerations – Treatment of Existing Staff. Treatment of existing staff requires special considerations with respect to a design/build/operate project. Respondents recommended that an RFP and a design/build/operate contract clearly specify those measures that would protect existing staff. Severn Trent indicated that it typically retains existing staff and offers benefits of support from its nationwide and global network of operations and technical professionals. A few firms indicated that design/build/operate contracts can benefit existing staff by providing advantages such as open communication between the operator, staff and the owner, as well as improved compensation, protection against layoffs, employee ownership options, improved working conditions, and career growth and advancement.

Special Considerations – Long-Term Maintenance and Repairs. The long-term nature of a design/build/operate transaction necessitates addressing long-term maintenance obligations in the design/build/operate contract. To assure proper long-term maintenance of a facility, a facility condition evaluation conducted at the beginning and end of the contract term was recommended. Likewise, a predetermined schedule of maintenance, repair and replacement requirements throughout the term is also necessary. Respondents were split on whether they would be willing to accept a limited or even full transfer of capital maintenance risk. Some respondents recommended establishing a capital replacement fund to cover capital maintenance and help to ensure proper maintenance of the facility. Some respondents recommended periodic maintenance inspections by the County and requiring stricter performance standards in the final five years of the contract to help ensure proper maintenance of the facility throughout the term.

Special Considerations – Fixed Service Fee. A long-term contract would provide for a fixed annual service fee for operation of the facility, with annual adjustments based on a blend of indices used for adjusting various components of the service fee, such as those relating to labor and chemicals. Electricity and gas rates could be paid by the County as "pass through" costs.



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Special Considerations – Single Guarantor. Often a design/build/operate contract is structured to provide performance security in the form of a “single guarantor” whereby the operator or another single firm, guarantees performance of the entire design/build/operate contract. The single guarantor arrangement creates one point of responsibility for the project throughout the contract term. While some respondents indicated that they would be willing to participate in a procurement structure of this manner, others did not favor the single guarantor structure. CH2M Hill responded that the single guarantor structure provides a best value solution for an owner and that it would offer a single guarantor for its projects. Despite an acknowledgement that the “single guarantor” structure is widely used, Veolia Water indicated that it does not believe the single guarantor structure is viable in today’s marketplace. Veolia Water instead favors the “successor guarantor” concept in which the design-builder serves as the guarantor through the design, construction and startup phase of the project and then subsequently at a predetermined time, such as one year following acceptance of the plant, the operating company assumes the obligations of the guarantor.

### 4. Project Financing

Market Interest. Sixteen of the respondents provided varying levels of discussion regarding private financing of projects in Pima County’s CIP. Of these sixteen, eleven provided substantive comments and three provided a discussion that included some details related to the way in which the County could possibly utilize private financing.

Of the eleven respondents that provided significant discussion on private financing, nine indicated that private financing is a viable alternative to traditional public sector financing under certain conditions; one respondent was skeptical of the viability of private financing; and one was completely against the concept of private financing.

All sixteen of the respondents that addressed the concept of private financing indicated that they had some experience with the concept of private financing of public assets, but only one respondent claimed to have successfully utilized private financing tools to fund water/wastewater assets in the United States.

With regard to the applicability of private financing under the various project delivery options, all of the private financing respondents indicated that private financing was not appropriate under Design-Bid-Build or CMAR project delivery methods and only marginally applicable under Design/Build. All respondents agreed that the potential benefits of private financing could only be realized under the Design/Build/Operate delivery model due to the need to secure the financing with a long-term operating contract.

Many of the private financing respondents also suggested that private financing was more applicable for those components of the Pima County CIP that allowed for a segregation of project cash flows and risks such as the Roger Road Water Reclamation Campus; the biogas and residuals management facilities at Ina Road WPCF; and the regional treatment facilities that serve the outlying areas.

All three of the private financing respondents that provided significant detail regarding private financing packages indicated that the private financing package that provided the greatest potential benefits would involve the use of eighty-five to ninety percent private non-recourse debt and ten to fifteen percent private



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equity. Additionally, the private debt would be secured with a twenty- to fifty-year Design/Build/Operate contract that provided for the recovery of interest and return on equity through the periodic service fee.

There was general consensus among the sixteen private financing respondents regarding the potential advantages and disadvantages of using private financing tools to fund projects in Pima County's CIP.

Advantages. Potential advantages of private financing cited by the private financing respondents included:

- Private financing provides the County an alternative if the County Board of Supervisors or the County constituents fail to authorize the use of traditional public financing tools;
- Private financing would most likely not be considered a debt of the County and therefore would not impact the County's capacity to issue debt for other projects;
- Private financing could accelerate project schedules since the County would not be required to go through the process of seeking and gaining the approvals necessary to utilize traditional public financing tools; and
- Private financing, under the right circumstances, could result in lower project life cycle costs assuming that the project delivery/financing model included a private operations component with a term of at least twenty-years and preferably forty- to fifty-years.

Disadvantages. Potential disadvantages of private financing cited by the private financing respondents included:

- Financing costs under a private financing model would be greater due to the higher cost of capital associated with the use of private financing packages comprised of private equity and taxable debt; and
- Due to the fact that there are few, if any, previous transactions that could serve as precedent, the use of private financing would probably require the use of a number of financial advisors/consultants to develop a private financing transaction. As a result, issuance/transaction costs would most likely be higher than they would be under a traditional public financing model.

Special Considerations. All of the private financing respondents indicated that a private financing package that involved the use of Private Activity Bonds offered the greatest potential benefits to Pima County. However, all were quick to point out that under the existing rules that govern the use of Private Activity Bonds it was very unlikely that Private Activity Bonds would be available to fund wastewater projects. It should be noted, however, that efforts are being made within various departments of the Federal government to reduce some of the restrictions of the use of Private Activity Bonds. As such, if these efforts are successful, the use of Private Activity Bonds to fund portions of the County's CIP may be an option in the future.



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### 5. Biosolids – Disposal/Biogas Utilization

While specific submittals addressed biosolids issues only, several others offered comments on biosolids disposal or biogas utilization. Remarks provided in the other submissions on this topic are included in the remarks below.

#### 5.1 Biosolids Disposal

Market Interest. Interest in the biosolids disposal from the Pima County wastewater facilities ranged from disposal of current Class B biosolids to processing and disposal of future Class A biosolids to innovative processing technologies. Nine respondents stated an interest in biosolids disposal. Four of the respondents had substantive comments regarding biosolids disposal by a third party. One of those respondents is a major leader, Synagro, in biosolids management with more than 1,000 active accounts for biosolids management nationwide. Three submittals proposed unique approaches to processing biosolids with one those having an innovative disposal option for small plants.

In general, for achieving drier biosolids concentrations required of a Class A biosolids rating, respondents suggested or recommended heat drying technology with provisos that a market for Class A exists, and regulatory issues and risks are adequately addressed by Pima County. Further, the respondents recommended alternative delivery approaches utilizing design/build, design/build/operate, or design/build/finance/operate as a means procurement.

Advantages. Based on the comments from the respondents there is interest in third party disposal of biosolids provided there are appropriate contract provisions. Particularly, the respondents were interested in constructing, operating and possibly financing Class A heat drying facilities provided that an extended period of operations of the facilities is included in the procurement requirements. Most respondents agree that a design/build or design/build/operate procurement of heat drying technology for Class A biosolids is an available and proven project delivery approach.

Disadvantages. Although there is interest in Class A biosolids, the respondents do not stated that a Class A biosolids market exists in Pima County, or that Class A biosolids would be a less expensive disposal option based on a higher value of the end product. Therefore, without regulatory pressure to develop a Class A biosolids, the decision to proceed to Class A will need to be based on an economic analysis and Class A products market study conducted by Pima County.

Special Considerations. Prior to proceeding with Class A biosolids the respondents cautioned to verify that a market for Class A products exists and that regulatory issues and risks are fully addressed. Several firms supported the centralization of solids handling and use of centrifuges for dewatering at the Ina Road Water Pollution Control Facility as recommended in the Regional Optimization Master Plan. Three respondents offered innovative or alternative solutions for biosolids treatment and disposal. The innovative and alternative solutions are largely unproven or would possibly be suitable for very small wastewater treatment facilities. Lastly, Synagro expressed an interest in financing and operating the wastewater treatment facilities for the new Water Reclamation Campus.

#### 5.2 Biogas Utilization



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Market Interest. Seven respondents addressed collecting the renewable energy source (biogas) from the anaerobic digesters and producing both thermal energy for process needs and electrical power from generator sets. Four of the respondents had substantive comments. Most of the interest in the biogas projects was in design/build/operate or a design/build/finance/operate type projects where private capital could be invested.

All respondents were supportive of generating power from biogas and scalping thermal energy for process use. The respondents viewed the biogas power operation as a non-critical wastewater treatment function and saw it as a potential for third party operation. As such, alternative project delivery approaches were considered to be appropriate for this operation, which could include operations and private financing.

Advantages. Based on the comments from the respondents the advantage of having the biogas power generation operation provided by a third party is that it is not a core business of the wastewater operation and the issues with upgrading existing systems and cost effective operation could be shifted to others, who operate these type of system as a core business. The facilities operations would be placed with others in turn for a guaranteed reliable power delivery provided to Pima County. Further, there were comments that with biogas power generation improvements and some rate restructuring, particularly at Roger Road WWTP, there could be some overall power savings accrued to the County. This would be advantageous time because the current electricity service power provider, Tucson Electric Power, is considering change to their rate structure and pricing levels in January 2009. According to APS Energy Services:

“Arizona design build energy savings projects (such as the one contemplated here) can be procured under **ARS 34-455** which encourages public agencies to implement these types of projects. As long as the project is self-funding from the annual savings and the term length is 25 years or less the agency can define its own criteria for procurement through the request for proposals process.”

Disadvantages. The principle disadvantage of a third party operation is the loss of control over power generation and the cost savings provided to the County. With a third party operation the costs of power would be left to the marketplace, unless suitable power rates are negotiated with the power generator which factored in the “green” credits inherent in the operation. With a third party operation the County would most likely be required to guarantee a minimum continuous supply of methane gas from the digester operations. Below the minimum gas production may cause a penalty payment to be imposed on the County which may negate the savings from the third party operation.

Special Considerations. The biogas production is a means for Pima County to reduce overall power costs at Ina Road WPCF. Further there is an increasing market interest in renewable energy sources, such as biogas, as it relates to green credits. This situation should be viewed as an opportunity for the County to obtain a favorable long term deal with a third party interest.

## 6. Alternative Technologies

Special Considerations. For completeness of the review of the information submitted by respondents to the Request for Expression of Interest, four respondents proposed alternative and innovative technologies for the Pima County wastewater facilities. There was one each for wastewater treatment, sludge treatment, biosolids processing and biosolids disposal. The wastewater treatment technology proposed was a membrane bioreactor (MBR) process that was reviewed during the Regional Optimization Master



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Plan activities with many other technologies to achieve the future ammonia toxicity standard for Pima County. While this technology can meet the future treatment requirements and has a small footprint as compared to others, the present worth costs of such a system is more than the recommended treatment technology. Therefore, it was eliminated from future considerations at the Pima County plants.

The proposed sludge treatment system appears to be similar to a physical-chemical treatment process which in years past had proven to be very costly. At this time there exists one small system in the start-up phase of operations in Florida that has not produced data or information to substantiate any claims offered in their letter of interest. Without a proven track record of operating facilities of the size of Pima County facilities, this would be a very risky system to invest County resources. Therefore this system is eliminated from future consideration.

The proposed biosolids processing system combines a solar drying process with indirect mechanical heat drying equipment to produce a Class A biosolids. The biosolids processing begins with solar drying and is finished with mechanical heat drying to achieve a consistent final product. With the solar drying component in the process the system is land intensive and not conducive for use at large treatment plants in Pima County. In addition, the overall system has a significant odor potential to be addressed with the solar drying process. Therefore, this process is not recommended for use at the major facilities in Pima County.

Lastly, a process to spray liquid biosolids on agricultural fields to grow crops to be fermented into ethanol was proposed. First a number of regulatory Permits held by the County would need to be revised and sanctioned by the State of Arizona before proceeding with the process. Furthermore, this process is very land intensive and would need to be proven to be commercially viable before Pima County would be positioned to invest in such process. The proposal has a County buyback requirement for the ethanol at \$3.80 per gallon. This may have applicability at very small treatment works with access to nearby agricultural land, but the economics would need to be favorable to the County.

In summary, each of the technologies had been evaluated during the Regional Optimization Master Plan development and discounted, or the technology is unproven or perhaps suitable for facilities smaller than those of Pima County. None of the suggested alternatives or innovations were worthy of further investigations by Pima County at this time.

## 7. Application to Pima County Facilities

Based on the aforementioned data and information from the expression of interest respondents, the following range of project delivery can be considered by Pima County for the projects identified in the Regional Optimization Master Plan. The project delivery approaches for each project are to be discussed further in detail before a final specific recommendation for each project element is provided.

<u>Project element</u>	<u>Suggested Project Delivery*</u>
• New Water Reclamation Campus	D/B or D/B/O
• Ina Road WPCF Upgrades and Expansion	CMAR or D/B (single step)
• Biosolids Disposal	D/B/O or D/B/F/O
• Biogas Utilization	D/B/O or D/B/F/O
• Regional Facilities	CMAR, D/B, D/B/O or D/B/F/O



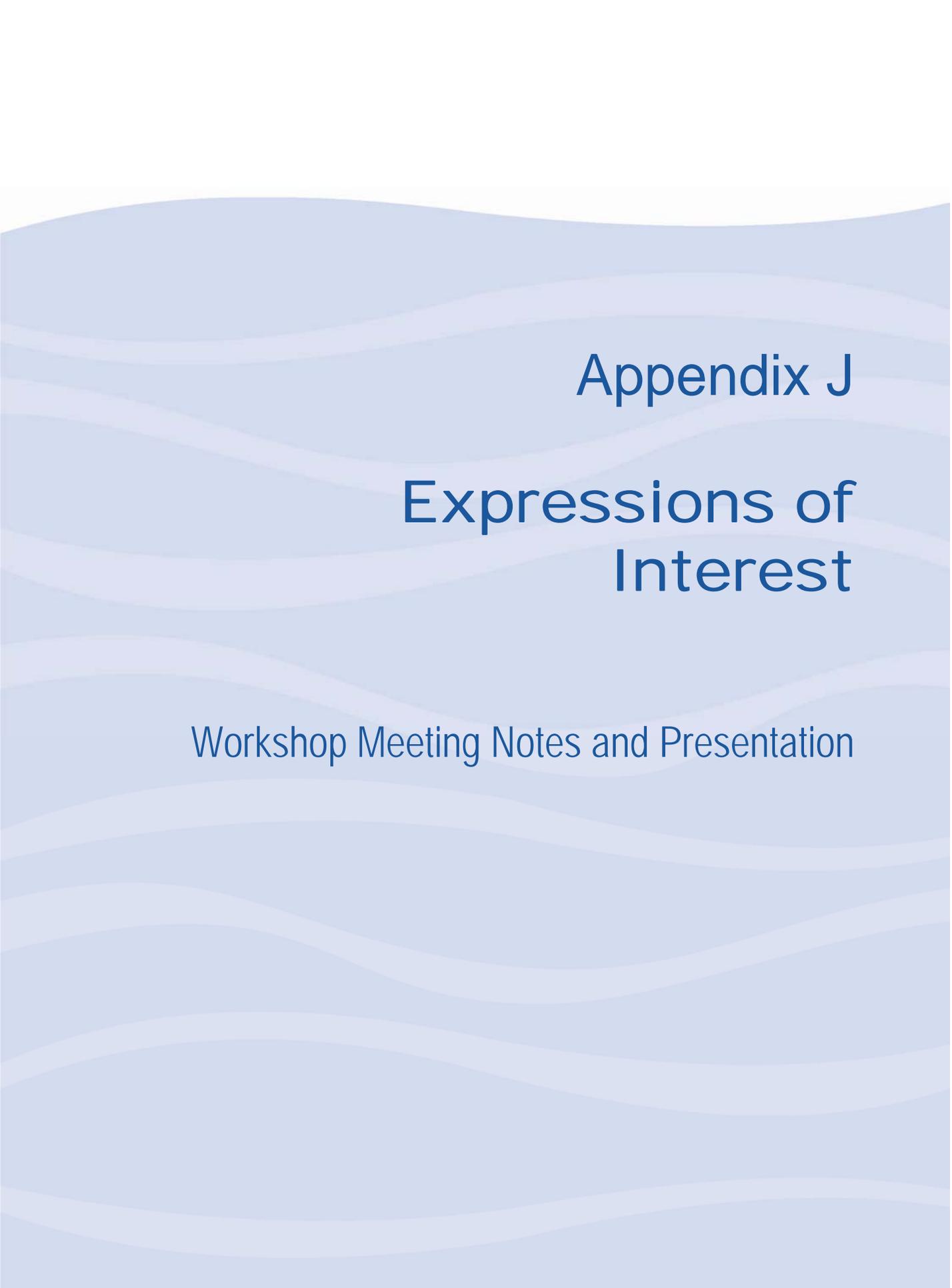
## Summary of Responses to Request for Expressions of Interest

Comments on the range of project delivery approaches included that procurement would need to develop documents for design/build projects; and the County is not ready for third party operations, but if third party operations were a serious consideration, the current staff issues would need to be thoroughly addressed to protect their jobs and interest. In general, it was agreed by all that there were no deal killers in executing any of the suggested project delivery approaches listed above.

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\* D/B = design/build                      D/B/F/O = design/build/finance/operate  
D/B/O = design/build/operate            CMAR = construction manager at risk





Appendix J

# Expressions of Interest

Workshop Meeting Notes and Presentation

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Appendix J – Expression of Interest Workshop

**Workshop Meeting Notes  
Expression of Interest in Pima County Programs and Projects**

1. The Expression of Interest Workshop for the Pima County Regional Optimization Master Plan was held on July 30, 2007. The agenda, purpose of workshop statement and flip chart notes recorded during the workshop are attached at the end of the notes. In attendance were:

**PCWMD**

**Director**

Michael Gritzuk

**Deputy Directors**

Mike Bunch

Jackson Jenkins

Jeff Nichols

**PCWMD Staff**

Ed Curley

Mary Hamilton

Michael Kostrzewski

Ron Riska, Project Manager

Eric Wieduwilt

**Legal**

Chuck Wesselhoff

**DIRECTOR OF COUNTY  
FINANCE AND RISK  
MANAGEMENT**

Tom Burke

**PIMA COUNTY PROCUREMENT  
DEPARTMENT**

John Carter

Terri McMahan

Jerry Rizzo

**PIMA COUNTY  
ADMINISTRATION**

John Bernal

Nannette Slusser (part time)

**GREELEY AND HANSEN  
PROJECT TEAM**

Jerry Bish

Eric Petersen

Andy Richardson

Harold Smith

Joe Sullivan

2. Major topics of the workshop were:

- Expression of Interest Workshop
  - ▶ Project Delivery
  - ▶ Project Financing
  - ▶ Biosolids Options
    - Disposal
    - Biogas
  - ▶ Alternative Technologies

A set of handouts were provided to each attendee at the workshop.

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3. Mike Gritzuk welcomed the attendees to the workshop and reviewed the expectations of the group. The workshop will provide a detailed review of the submissions to the Request for Expression of Interest issued by the County in April, 2007, and list recommendations for the facilities identified in the Regional Optimization Master Plan. With agreement on the recommendations the implementation plan for the Regional Optimization Master Plan will proceed to completion by October. At this point the workshop presentation and discussion was invited to begin.
4. Andy Richardson quickly outlined the meeting topics and purpose. He further elaborated on his role as facilitator and encouraged all to participate. The workshop objectives were to review the information received by the County through the request for expression of interest process and how the received information relates to the projects in Regional Optimization Master Plan. In addition, an overview of the Regional Optimization Master Plan scope and elements were presented. Critical project dates and element costs were provided for context to the comments offered by the expression of interest respondents. Further, objectives of the Request for Expression of Interest for engaging the marketplace were presented to set the stage for the subsequent workshop presentations.

Workshop agenda, meeting purpose, ground rules, Regional Optimization Master Plan overview, and Request for Expression of Interest objectives were covered on pages 1 through 8 of the handout.

5. The twofold objective of the Request for the Expression of Interest was to invite private sector comments on public policy decisions, and to seek potential cost savings through market positioning to provide high value at least cost. Overall twenty six (26) submittals were received from engineering firms, construction firms, design/build firms, design/build/operate firms, financial firms, biosolids disposal firms, and firms interested in biogas utilization. Submissions covered the entire spectrum of requested information. An overview of the submissions in response to the Request for Expression of Interest was provided by Eric Petersen. Overarching comments within the submissions included: projects would benefit from some sort of alternative delivery (either construction-manager-at-risk or design/build), no need to break the projects into small packages, and qualifications based selection was the preferred method of procurement. One submission by EPCOR had a particularly interesting perspective on alternative delivery involving value of money and pricing of risk approaches. In general, the level of information provided by the submitting firms was thoughtful and of very high quality.

Mike Gritzuk asked if the procurement approach outlined by EPCOR to minimize risk was in accord with Arizona law. The response was yes. Also, the EPCOR approach to private sector project finance is within Arizona law. Harold Smith advised that the EPCOR approach is not unique. The Lake Pleasant project for Phoenix included elements of the EPCOR approach.

Comments on the respondents and general comments from the respondents are covered on pages 8 through 14 of the handout.

6. Joe Sullivan reviewed the comments received from respondents on the traditional design-bid-build and construction-manager-at-risk procurement methods. Most firms expressed interest in the design-bid-build approach. This approach is suitable for all construction projects and is well

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understood in the engineering and construction communities. The design-bid-build delivery method is successful when: project documents are accurate and complete, a quality contractor is obtained, and construction oversight is provided. Most respondents indicated that alternative project delivery approaches are preferable due to the size and complexity of the facilities recommended in the Regional Optimization Master Plan.

From the respondent comments construction-manager-at-risk was generally favored over design-bid-build by construction firms, design/build companies and some engineering firms. The value is that the construction manager assists in the preliminary design and the following stages of design to incorporate cost saving features and cost effective construction means and methods. Further, construction reviews, up-to-date cost estimates and fast tracking of projects (shorter delivery schedules) are provide throughout the design and construction process. A guaranteed maximum price for the project will be developed sooner than traditional design-bid-build approach, and with a fuller understanding by all parties of the objectives and challenges involved.

Mike Bunch asked if the construction-manager-at-risk firms could be pre-qualified or limited in number. John Carter offered the County could limit the number of firms based on certain capabilities, but could not limit firms to just a number. The construction-manager-at-risk firm could be procured under qualifications based selection under Arizona law.

Comments on traditional design-bid-build and construction-manager-at-risk were covered on pages 14 through 17 of the handout.

7. Comments from the private sector on alternative delivery methods of design/build and design/build/operate were presented by Eric Petersen. Under both of these approaches the marriage between the designer and the contractor is voluntary, whereas under the construction-manager-at-risk approach the owner selects the designer and then selects the construction manager. This latter process may be described as a “shot-gun wedding” approach.

The design/build approach is a highly collaborative process which spawns innovation and cost savings. Fixed project costs are known early in the design and construction continuum. Also, some project risk is transferable from the owner to the design/build team. For example, the owner is not involved in disputes between designer and contractor. This approach works best when project outcomes are less prescriptive and are based on goals that include measurable and objective criteria (encourages innovation).

Ron Riska indicated that PCWMD has invested time and energy into the selection of a robust, high quality wastewater treatment process for the future major facilities in Pima County. Would prescribing the wastewater process be detrimental to the design/build approach for these facilities? The response is that PCWMD can identify the wastewater process to be used; and because there are enough other elements in these projects, the design/build team can be innovative with the other parts of the project. Contract documents must clearly specify what elements need to be factored into final project outcome.

Mike Gritzuk asked about the history of bid price spreads between design-bid-build and design/build contracts. In general, for design-bid-build projects the spread in bid prices can be as high as 100 percent from the engineer’s estimate. On design/build projects the bid price of the



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top two bidders are usually close and the others vary from those. Further, during the execution of the work under a design/build contract protests over bids are nil and change orders are nil both of which may have a cost implication.

Single stage design/build is also known as progressive, or collaborative, or negotiated, or sole source design/build. This is permissible under Arizona law as long as the negotiations for the project are with three firms. The negotiations are not a competitive process, but may be suitable for particular projects, such as to meet an aggressive schedule. This approach has been used in Pima County for the skyline project with a total construction cost of \$21 to \$22 million. Contractors are interested in this approach, because it eliminates the large development fee costs incurred with the traditional two step design/build selection process. In some regards, the single stage design/build is similar to the construction-manager-at-risk approach where the owner has a role in design.

Adding operations and finance into the design/build project widens the basket of duties for the proposing firm or team, and reduces the number of players to submit on a project scope. It should be noted that design/build does not include an operations component for startup or short term operations before handoff to the owner. The concept of startup and short term operations with design/build can be referred to as enhanced design/build. This concept has fallen out of favor and is likely not to attract interest from the construction community in bidding such an arrangement.

The design/build/operate approach will limit work to 3 and as many as 5 contractors which pursue projects nationally. This approach provides long term operating costs and performance guarantees. Benefits for the County would be lower costs and better performance. Challenges are protection of assets and protection of the existing workforce. Workforce issue would need to be addressed early for successful transition to this new private sector operating mode.

The design/build, design/build (single step), and design/build/operate comments were covered on pages 18 through 25 in the handout.

8. After review of the comments on project delivery approaches from the Expression on Interest respondents, Eric Petersen presented the general business considerations and procurement issues for the alternative project delivery approaches. By all accounts proper risk allocation is key. The least cost approach is to assign risks to the party that is best able to manage it. There are many risks including: condition risk, permitting risk, commodity escalation risk, process engineering risk, sureties influence on risk, and security of performance risk. All of these influence the bottom line cost of a project. Lowering risk will reduce overall project costs.

Alternative delivery contract documents need to: clearly define the scope of work and contractual obligations, set measurable and achievable performance standards, include effective administration and communications provisions, and establish workable mechanisms for change. Business concerns included: stated dollar limit on liability in contract, reasonable liquidated damages, performance incentives, no consequential damages, protection from commodity price escalation, and clear start-up and testing criteria.

Procurement processes for alternative delivery need to be open, fair and non-political. The County procurement process should include quality based selection with open book bidding and a

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clear set of selection criteria. Shortlisting of three firms is required and advisable. A notice of intent is a good method to alert tentative proposers of impending projects to allow for the formation of teams, and analysis of work load and capacity prior to the project advertisement.

Business terms and risks, and procurement issues were covered on pages 25 through 29 of the handout.

9. The market interest in project financing of public works was covered by Harold Smith. Sixteen respondents provided comment on financing and all suggested private activity bonds would offer the greatest potential benefit to the County. Also, the respondents generally believe that traditional tax-exempt debt is the most cost effective means of financing the PCWMD capital improvements. From the respondents private financing does not appear to be appropriate for design-bid-build or construction-manager-at-risk projects. Private financing for design/build could work, but would be expensive. Private financing would work with design/build/operate where funding is secured by long term revenues (20 to 50 years). Some suggested private financing was more suitable for specialized projects, such as, biosolids disposal and biogas power generation.

With private financing of projects costs are shifted from debt to operating costs. This could be impacted by State of Arizona restrictions on spending caps. Tom Burke indicated that the State of Arizona had a per capita per year expenditure increase cap, and that service costs would fall under expenditures and would be subject to the cap. Ed Curley indicated that private equity is considered a junior level asset and is not pledged. Private funding remains an option if the voters deny approval of bonds earmarked for the wastewater infrastructure improvements.

Project financing was covered on pages 29 through 32 of the handout.

10. The market interest in biosolids disposal was summarized by Jerry Bish. In general, respondents are interested in disposal of Pima County biosolids, and supported the centralization of solids handling and use of centrifuges for dewatering at the Ina Road Water Pollution Control Facility as recommended in the regional master plan. For achieving drier biosolids concentrations for a Class A biosolids rating, respondents suggested heat drying technology with the provisos that a market for Class A exists, and regulatory issues and risks are adequately addressed. Further, the respondents recommended alternative delivery approaches utilizing design/build, design/build/operate, or design/build/operate/finance as a means procurement.

Three respondents offered innovative or alternative solutions for biosolids treatment and disposal. These solutions are largely unproven and would possibly be suitable for very small wastewater treatment facilities.

Biosolids disposal comments were covered on pages 32 and 33 of the handout

11. Several respondents commented on biogas utilization at the Ina Road Water Pollution Control Facility. All were supportive of generating power from biogas and scalping thermal energy for process use. As summarized by Jerry Bish the respondents viewed the biogas power operation as a non-critical wastewater treatment function and saw it as a potential for third party operation. As such, alternative project delivery approaches are appropriate for this operation, which could



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include operations and private financing. Mike Gritzuk offered that APS and a large biogas operation had expressed interest in biogas and were going to submit their response soon. Those responses will be added to the body of information when received.

Biogas utilization comments were covered on pages 34 and 35 of the handout.

12. For completeness of review of the information submitted through the expression of interest process, several respondents proposed alternative and innovative technologies for the Pima County wastewater facilities. There was one each for wastewater treatment, sludge treatment, biosolids processing and biosolids disposal. Jerry Bish indicated that each of the technologies had been evaluated during the regional optimization planning process and discounted, or the technology was unproven or suitable for facilities smaller than those of Pima County. None of the suggested alternatives or innovations were worthy of further investigations by the County at this time.

Alternative technologies were covered on pages 35 through 37 of the handout.

13. Based on the aforementioned data and information the following range of project delivery suggestions were offered for group comment. The project delivery approaches for each project are to be discussed further in detail before a specific recommendation for each project element is provided.

<u>Project element</u>	<u>Suggested Project Delivery*</u>
New Water Reclamation Campus	D/B or D/B/O
Ina Road WPCF Upgrades and Expansion	CMAR or D/B (single step)
Biosolids Disposal	D/B/O or D/B/O/F
Biogas Utilization	D/B/O or D/B/O/F
Regional Facilities	CMAR, D/B, D/B/O or D/B/O/F

Comments on the range of suggested project delivery approaches included that procurement would need to develop documents for design/build projects; and the County is not ready for third party operations, but if third party operations were a serious consideration, the current staff issues would need to be thoroughly addressed to protect their jobs and interest. In general, it was agreed by all that there were no deal killers in executing any of the suggested project delivery approaches listed above.

- 
- \* D/B = design/build  
D/B/O = design/build/operate  
CMAR = construction manager at risk  
D/B/O/F = design/build/operate/finance

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**Agenda  
Expression of Interest - Workshop  
July 30, 2007**

<i>Time</i>	<i>Topic</i>	<i>Presenter</i>
8:15 am	<i>Health and Welfare Building, 150 W. Congress - 4th Floor Training Room</i>	
8:30 am	Opening Session <ul style="list-style-type: none"> <li>• Welcoming Remarks</li> <li>• Review Agenda</li> <li>• Workshop Purpose</li> </ul>	Mike Gritzuk Andy Richardson
8:35 am	Expression of Interest Process	Andy Richardson
8:45 am	Project Delivery	Eric Petersen
8:55 am	Traditional Design – Bid – Build	Eric Petersen/Joe Sullivan
9:00 am	Construction Manager @ Risk	Eric Petersen/Joe Sullivan
9:30 am	Design - Build	Eric Petersen/Joe Sullivan
10:00 am	Design - Build – Operate	Eric Petersen/Joe Sullivan
10:20 am	General Business Considerations	Eric Petersen
10:30 am	Procurement Terms	Eric Petersen
10:35 am	Break	
10:50 am	Project Financing	Harold Smith
11:25 am	Biosolids <ul style="list-style-type: none"> <li>• Disposal</li> <li>• Bio-Gas / Bio-Power</li> </ul>	Jerry Bish
11:40 am	Alternative technologies	Jerry Bish
11:50 am	Summary Wrap-Up <ul style="list-style-type: none"> <li>• Comments by Group</li> <li>• Closing Remarks</li> </ul>	Andy Richardson Mike Gritzuk
12:00 pm	Adjourn	

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**Purpose of Workshop**

Review and discuss the project delivery methods available to the County for the implementation of the Regional Optimization Master Plan (ROMP) facilities based on the submittals received from more than 25 respondents to the County's Request for Expressions of Interest. Presentations will address the submittals, the respondents, the depth of market interest in each delivery method, commentary from the respondents on which method is appropriate for each project, pros and cons of the various delivery methods from the contractors' standpoint, market views on how best to structure each procurement, and the potential for private project financing for some of the facilities.

**Flip Chart Notes – July 30, 2007**

**Comments and Questions**

- Think about how public/private firms would relate to rates and time factor
- EPCOR doable AZ law & public firm
- DBB – Can do some prequalification
- First step – DB County has possible \$20 million level

**Recap - What we heard this morning?**

- Tom Burke comments on CAP
- Procurement ok with methods discussed

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**Workshop Meeting Notes**  
**Expression of Interest in Pima County Programs and Projects – Part 2**  
*(ROMP Implementation Plan)*

1. Part 2 of the Expression of Interest Workshop for the Pima County Regional Optimization Master Plan (ROMP) was held on the afternoon of July 30, 2007. This workshop applied the data and information presented in the morning workshop to the identified ROMP projects. Comments and suggestions to be used by the project team were recorded on flip charts. The recorded items are attached at the end of the notes.

In attendance were:

**PCWMD**

**Director**

Michael Gritzuk

**Deputy Directors**

Mike Bunch

Jackson Jenkins

Jeff Nichols

**PCWMD Staff**

Ed Curley

Mary Hamilton

Michael Kostrzewski

Ron Riska, Project Manager

Mandley Rust

Eric Wieduwilt

**GREELEY AND HANSEN**

**PROJECT TEAM**

Jerry Bish

Bart Kreps

Eric Petersen

Andy Richardson

Harold Smith

Joe Sullivan



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**Appendix J – Expression of Interest Workshop**

14. Major topics of the ROMP Implementation Plan workshop were:

- Expression of Interest (ROMP Implementation Plan) Workshop
  - ▶ Funding Source and Rate Impacts Discussion
  - ▶ Implementation Schedule
  - ▶ Santa Cruz Interceptor Phase IV
  - ▶ Water Reclamation Campus
  - ▶ Electrical Service modifications
  - ▶ Ancillary Projects
  - ▶ Regional Facilities

A set of handouts, entitled ROMP Implementation Plan, were provided to each attendee at the workshop.

15. Mike Gritzuk welcomed the attendees to the continuation of the morning workshop on the Expressions of Interest from the marketplace and how that information applies to the specific ROMP projects. At this point the workshop presentation was invited to begin.

16. Andy Richardson quickly outlined the meeting agenda, purpose and objective. The meeting purpose was:

- Review and discuss private project financing and rate impacts for some of the facilities.
- Review and discuss the project delivery methods available to the County for the implementation of the Regional Optimization Master Plan (ROMP) facilities based on the County's Request for Expressions of Interest information. Address which method is appropriate for each project, and pros and cons of the various delivery methods.

The objective of the afternoon workshop activities was to identify number of ROMP projects and the appropriate project delivery approach for each. Attendees were reminded to participate fully.

The agenda and workshop purpose were covered on page 2 of the handout.

17. The project funding issues for the ROMP elements were reviewed by Harold Smith. Funding for the major treatment works construction will be traditional public debt financing, unless there is consideration for long term operations included in the scope of work. Public financing provides the best value for money and therefore the least cost to the County. Projects like the biosolids disposal and biogas utilization are subject to a different financing plan depending on the chosen approach to implementation. For these public-private partnerships may be possible with the use of private financing.

18. Implementation details for the Regional Optimization Master Plan project elements were reviewed by Jerry Bish. The Santa Cruz Interceptor Phase IV (plant interconnect pipeline), new Water Reclamation Campus, Ina Road WPCF upgrades and expansion, Electrical service modifications, ancillary projects and regional wastewater facilities are included under the project elements. Critical project dates, project elements, phasing, and individual project element schedules were outlined for discussion by the group. The suggested project delivery approaches

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for each project element was carried over from the morning workshop session for further discussion. The objective was to further narrow the possible project delivery approaches for each element to a specific one or two.

The ROMP implementation details including a summary scope and schedule of each project element were covered on pages 4 through 18 of the handout.

19. The Santa Cruz Interceptor Phase IV work is underway. The project delivery approach had been chosen by PCWMD as construction-manager-at-risk (CMAR) and the design engineer was selected. The solicitation for the construction management firm was underway at the time of the workshop. In addition, the project manager for the work has been selected. The remaining project need will be the addition of a construction manager when the project advances to that stage.
20. The new Water Reclamation Campus will be constructed as a single phase 32 mgd facility. Demolition of the existing Roger Road WWTP will be performed under a separate contract. The phases of work and recommended project delivery are shown below.

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**New Water Reclamation Campus**

-	Scope	Start	Complete	Recommended Project Delivery
1	Engineering – 32-mgd Facility (includes power feeds/standby power)	2007/08	2010	Professional
2	Construct – 32-mgd Facility	2011	2015	CMAR or single step D/B
3	Engineering – Demolition Existing Facilities	2014	2015	Professional
4	Demolition – Existing Facilities	2015	2017	D-B-B (Design Bid Build)

21. The Ina Road WPCF upgrades and expansion will be designed under one contract and constructed in phases. Phases of work and recommended project delivery are summarized below.

**Ina Road WPCF Upgrades and Expansion**

Phase	Scope	Start	Complete	Recommended Project Delivery
1	Engineering – 50-mgd + Biosolids + Future Biosolids (Class B) <ul style="list-style-type: none"> <li>■ New 12.5 mgd NdeN</li> <li>■ Rehab BNRAS</li> <li>■ New 25 mgd NdeN (HPO replacement)</li> <li>■ Biosolids handling and treatment</li> <li>■ Interim sludge facilities</li> </ul>	2007/08	2010	Professional
2	Construct – 50-mgd Facility <ul style="list-style-type: none"> <li>■ New 12.5 mgd NdeN</li> <li>■ Rehab BNRAS</li> <li>■ New 25 mgd NdeN (HPO replacement)</li> <li>■ Construct – Biosolids Facilities</li> <li>■ Interim Sludge Facilities (one digester and GBF)</li> </ul>	2010	2014	CMAR
		2009	2011	CMAR
3	Construct - Biosolids Facilities (future)	2017	2020	D-B-B
4	Engineering/Construct – Class	After 2020	After 2020	D/B/O or D/B/O/F

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	A Biosolids			
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D/B/O – Design Build Operate  
D/B/O/F – Design Build Operate Finance

22. Electrical Service Modifications included work at the new Water Reclamation Campus and at Ina Road WWTP. The decision was made to have the electrical service with the new campus include with the construction of the facilities and to have the work passed accordingly. The Ina Road WPCF power unification would occur under a separate contract from the other project work at Ina Road WPCF. Lastly, the biogas power generation would be given further consideration as a candidate for third party operations. The phases of work for electrical service modifications and recommended project delivery are summarized below.

**Electrical Service Modifications**

Phase	Scope	Start	Complete	Recommended Project Delivery
1	Engineering – Ina Road WPCF Power Unification Modifications	2008	2009	Professional
2	Construct – Ina Road WPCF Power Unification Facilities	2010	2011	D-B-B
3	Construct – Biogas Power Generation Facilities	2012	2014	D/B/O or D/B/O/F

23. Ancillary Projects included the interim sludge facilities at Ina Road WPCF, central laboratory, PCWMD general administration facilities, and instrumentation and control. The interim sludge facilities at Ina Road WPCF are permanent facilities that need to be online once the interconnect pipeline is constructed to accommodate additional sludge processing needs at the plant. This work is to be included with the other project work at Ina Road WPCF, but will be identified as a project for early construction at the site.

The central laboratory was recognized as special work and would remain as a separate contract for design and construction. The general administration facilities were not viewed as special work and are to be included in the new Water Reclamation Campus work.

Instrumentation and controls is another specialized area of work. There was discussion about this being a separate contract including the work at Ina Road WPCF and the new Water Reclamation Campus, but a final resolution was not achieved. More discussion within PCMWD will be required before a final direction is provided.

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**Ancillary Projects**

Phase	Scope	Start	Complete	Recommended Project Delivery
1	Architectural Services – Central Laboratory	2007	2010	Professional
2	Construct – Central Laboratory	2011	2013	CMAR
3	Engineering - Instrumentation & Control	2008	2009	*
4	Construct – I&C	2010	2012	*

\* Undecided at this time

24. Project delivery approaches for the regional facilities were quickly mentioned at the meeting. It was generally agreed that the expansion projects would be CMAR. It was as further suggested that the Southlands could be D/B or D/B/O for the first phase. It is noted that existing Arivaca Junction, Pima County Fairgrounds and Vista Rillito facilities will be phased out of operation over time. Further, it is possible that Mt.Lemmon WWTP may be expanded based on studies underway. Expansion of that facility is to be determined (TBD). The recommended project delivery approaches for the regional facilities expansions should be revisited prior to finalization.

**Regional Facilities**

No.	Facility	Expand 1	Expand 2	Expand 3	Expand 4	Recommended Project Delivery
1	Arivaca Junction	-	-	-	-	No expansions
2	Avra Valley	2006 / 2007	2008 / 2009	-	-	CMAR
3	Corona de Tucson	2006 / 2007	2018 / 2019	2027 / 2028	-	CMAR
4	Southlands	2009/2010	2010 / 2011	2012 / 2013	2014 / 2015	D/B, D/B/O, CMAR
5	Green Valley	2011 / 2012		-	-	CMAR
6	Marana	2006 / 2007	2008 / 2009	2018 / 2019	2027 / 2028	CMAR
7	Mt. Lemmon	TBD	-	-	-	Possible expansion
8	PC Fairgrounds	-	-	-	-	No expansions
9	Rillito Vista	-	-	-	-	No expansions

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25. Andy Richardson summarized the number of ROMP projects derived from the workshop discussions as presented in the above tables. It was noted that contracts for project management and construction management services were generally not included in the above listings.

**Flip Chart Notes – July 30, 2007**

**Objectives for this afternoon**

- Number of projects
- How delivered

**Roger Road Contracts**

- Prepare D/B documents
- One D/B contract for 32 mgd facility.
- Demolition contract later
- Look at O when preparing D/B documents

**Projects**

- New Water Reclamation Campus – Method D/B or possibly D/B/O
  - One contract for 32 mgd facilities
- Ina Road WPCF – Method CMAR or D/B (single step)
- Biosolids disposal/class “A” – Method D/B/O or D/B/O/F
- Biogas - Method D/B/O or D/B/O/F
  - Move up dates
  - 2010 & 2011 – overall plant
- Regional facilities – Method D/B or CMAR or D/B/O/F

**Ina Road Projects**

- 1 designer @ CMAR for entire Ina Road WPCF work
- Phase 2 & 3 scope CMAR
- Phase 4 (later) – move forward
- 4 Contracts
  - CMAR design services
  - CMAR project management services
  - CMAR construction
  - CMAR construction management services

**Electrical Service Modifications**

- Put Phase 1 into water campus project – have this phased
- Put Phases 3 & 4 into Ina Road design contract for MCC
- Link HPO electrical into power grid
- Separate project for power upgrade

**Regional Optimization Master Plan  
Final Report**

Appendix J – Expression of Interest Workshop

**Ancillary Project**

- Lab separate from D/B construction work  
Move Administration into new Water Reclamation Campus



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# Expression of Interest Workshop

July 30, 2007

## Agenda

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- Introduction
- Project Delivery
- Project Financing
- Biosolids
  - Biosolids Disposal
  - Biogas
- Alternative Technologies



## Purpose of Workshop

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- Review and discuss project delivery methods available to the County for implementation of the Regional Optimization Master Plan (ROMP) facilities
- Based on Submittals received from 26 respondents to the County's Request for Expressions of Interest.

### Address:

- submittals, respondents, depth of market interest
- commentary on which delivery method is appropriate for each project
- pros / cons of various delivery methods from contractors' standpoint
- market views on how best to structure each procurement
- potential for private project financing for some of the facilities

## Groundrules

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- Listen attentively and respectfully to others
- Everyone must participate fully to the extent of their expertise
- Understanding is our objective, but consensus is not required
- We agree to speak up honestly and with candor
- Disagreements are with opinions or issues, and have basis in fact, not with personalities

## Role of Facilitator

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- Remain neutral and objective
- Expedite adherence to agenda and schedule
- Negotiate changes in agenda, schedule, or procedure
- Ensure an equal opportunity to be heard
- Keep group focused on discussion as planned
- Manage discussion, sequence speakers, and exercise leadership



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## Introduction - ROMP & Expression of Interest Process

Andy Richardson

## **ROMP Scope**

---

- Develop the optimal treatment process and plan to comply with regulatory requirements to reduce total nitrogen concentrations in discharged effluent
- Master plan addresses foreseeable future regulatory requirements
- Determine the long-term capacity needs of the County metropolitan facilities, conveyance system and outlying growth areas

## **ROMP Scope, cont.**

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- Develop long-term plan for treatment, handling and beneficial use of bio-solids and bio-gas
- Develop a detailed implementation schedule to meet regulatory implementation deadlines and optimization master plan
- Develop a financial plan to support the system's regulatory and other needs for the next fifteen years

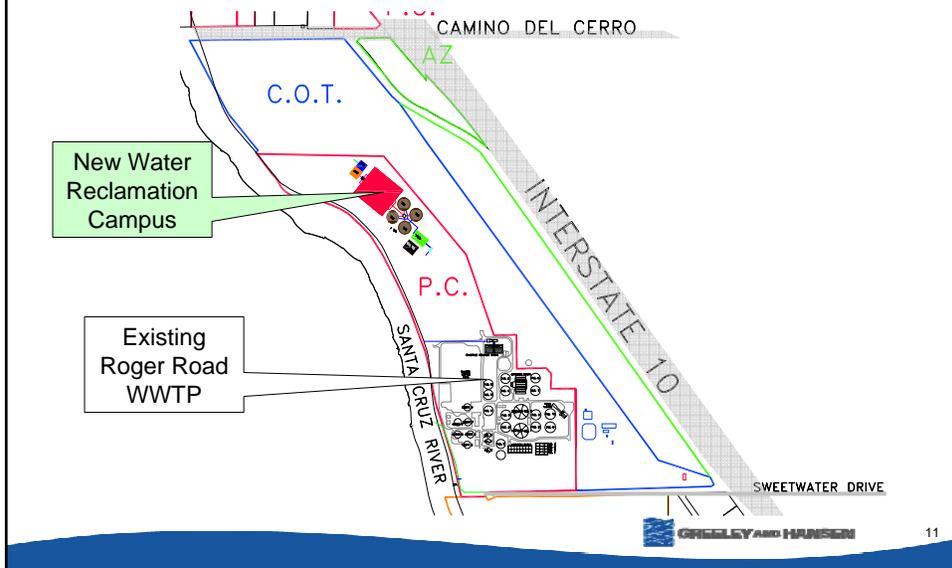
## Regulatory Implementation Requirements to Reduce Total Nitrogen Concentrations

	Ina Road WPCF	Roger Road WWTP
<ul style="list-style-type: none"><li>■ Complete initial engineering study</li><li>■ Provide recommendation for upgrading treatment plants</li><li>■ Submitted recommended plan letter to ADEQ on January 26, 2007</li></ul>	February 1, 2007	January 30, 2007
<ul style="list-style-type: none"><li>■ Award contract for construction</li></ul>	December 31, 2010	January 30, 2011
<ul style="list-style-type: none"><li>■ Treat plant effluent to non-toxic nitrogen levels</li></ul>	January 30, 2014	January 30, 2015

## Selected ROMP Plan

- Construct new 32 mgd Water Reclamation Campus (adjacent to Roger Road WWTP)
- Expand Ina Road WPCF to 50 mgd
- Plant Interconnect – 28 mgd average flow
- Decommission existing 41 mgd Roger Road WWTP

## Water Reclamation Campus – New 32-mgd Facility



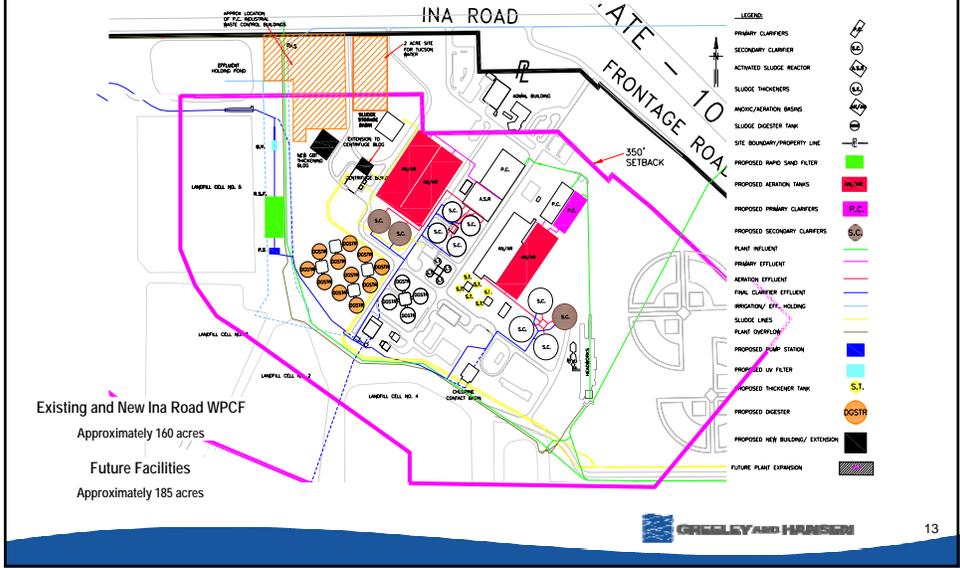
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## Ina Road WPCF

- Expand treatment capacity to 50 mgd
  - Requires 12.5 mgd expansion and significant retrofit of existing facilities
  - Most cost-effective utilization of existing headworks capacity of 50 mgd
- Centralized biosolids processing and handling
  - Reduces overall cost
  - Provides for bio-gas operations / utilization at one location
  - Provides one point of distribution of final product

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# 50-mgd Ina Road WPCF

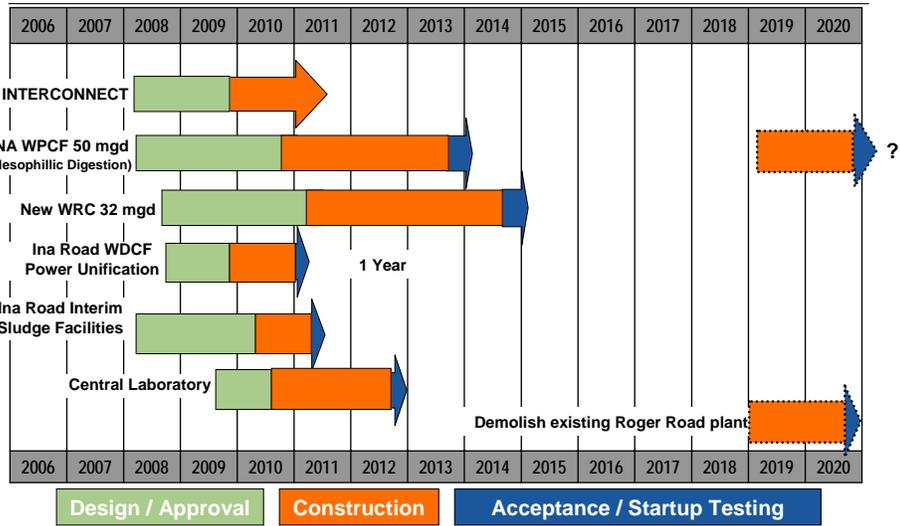


## ROMP Cost Estimate (2006 dollars)

	Roger Road Greenfield 32 mgd Ina Road 50 mgd
Ina Road Treatment Plant	\$243,900,000
Plant Interconnect	\$22,300,000
Water Reclamation Campus	\$211,000,000
Electrical Upgrades	\$35,000,000
Reclaimed Water Return	\$270,000
Roger Road WWTP Demolition	\$23,800,000
<b>Total Construction Cost</b>	<b>\$536,270,000</b>

Cost estimate includes 5% contingency

# Project Sequence



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## Request for Expression of Interest

## RFEI - Objectives

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- Engage the Marketplace
  - Solicit and receive private sector comments to inform public policy decisions
  - Gather perspectives from interested parties' on project delivery, private financing and related matters

## RFEI – Objectives, cont.

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- Seek Potential Cost Savings
  - Evaluate ability to provide cost savings based on current market conditions
  - Gain knowledge from market on how best to position ROMP projects for highest value at lowest costs

## RFEI - Schedule

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- RFEI posted April 23, 2007
- Pre-submittal meeting May 23, 2007
- Submittals June 22, 2007
- After receipt of submittals
  - Review Submittals
  - Assess ROMP report impacts
- Workshop July 30, 2007

## RFEI – Types of Projects

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- Proposed Projects
  - New Water Reclamation Campus
  - Ina Road WPCF Expansion/Upgrade
  - Biosolids Disposal Services
  - Biogas/Power Facilities
  - Regional Facilities
  - Innovative / Alternative

## RFEI – Procurement Approaches

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- Alternative Project Delivery Methods
  - Design - Bid - Build
  - Construction Manager at Risk
  - Design / Build and Related Project Delivery Methods
  - Design / Build / Operate

## RFEI Content

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- Private Project Financing



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# Project Delivery

Eric Petersen / Joe Sullivan

**Hawkins**  
DELAFIELD & WOOD LLP



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Management Department  
Tucson, Arizona



**GREELEY AND HANSEN**

# 26 Respondents

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## Engineering Firms

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- Brown and Caldwell
- Carollo
- Kennedy Jenks
- Malcolm Pirnie

## Construction Firms

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- Kiewit
- McCarthy
- Mortenson
- Sundt
- Western Summit

## Design-Build Firms

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- AMEC Infrastructure
- Black & Veatch
- MWH
- Parsons

## Design-Build-Operate Firms

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- CH2M Hill
- EPCOR/Stantec/PCL
- GE Water and Process Technologies
- PCL
- Severn Trent
- Veolia

## Financial Firms

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- Goldman Sachs
- Lehman Brothers

## Biosolids Firms

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- Synagro
- Fenton
- Bio Chem
- Sweet Ethanol
- Comments by others

## Biogas Power Firms

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- NZ Legacy
- Comments by others

## Providers of the Most Comprehensive Responses

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- Black & Veatch (D/B)
- CH2M Hill (D/B, D/B/O)
- EPCOR (D/B/O, DBFO)
- Lehman Brothers (DBFO)
- Parsons (D/B)
- Veolia (D/B/O)

## Some Non-Respondents

---

- Responses were not required as a condition to future participation
- Some non-respondents:
  - American Water
  - Southwest Water
  - Tucson Electric Power
  - Other engineering firms
  - Other construction firms
- May nonetheless propose

## Overall Comments (1)

---

- Most said all projects would benefit from some form of alternative delivery
- Engineering, construction and D/B firms favored CMAR or D/B
- D/B firms split on whether they would participate in a D/B/O
- Each would participate in all 5 projects if:
  - Their preferred delivery method was chosen
  - RFQ and RFP are properly structured

## Overall Comments (2)

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- No need to break up large projects into smaller packages
- Efficiency and economy could be sacrificed
- Pre-procurement one-on-one meetings between County and potential contractors are valuable
- During procurement, schedule one-on-one meetings on technical issues
- Qualifications-based selections are preferred
- An honorarium is not a major factor in decision to propose unless very substantial

## Overall Comments (3)

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- Seek to minimize protracted procurement processes
- Decide financing approach before RFP is issued
- In D/B/O, describe parameters of the "net present value" calculation of D/B/O price
- Solicit input directly from sureties and insurance companies

## Projects of Interest (1)

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- **Water Reclamation Campus:**
  - All construction firms; all D/B firms; all D/B/O firms
- **Ina Road WPCF:**
  - All construction firms; all D/B firms; all D/B/O firms
- **Biosolids Disposal:**
  - 1/5 construction firms; all D/B firms; 5/6 D/B/O firms

## Projects of Interest (2)

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- **Biogas Power:**
  - All D/B firms; 4/6 D/B/O firms
- **Outlying Facilities:**
  - 2/5 construction firms; all D/B firms; 5/6 D/B/O firms
- Interest in particular projects depends on how they are packaged and procured

## Alternative Delivery Works Best Where Projects:

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- Are schedule-sensitive
- Are relatively complex
- Cost more than \$10 million
- Have a variety of technical solutions
- Require long term performance assurances
- County is concerned with life-cycle costs
- Can benefit from risk sharing
- Involve “greenfield facilities”

## A Canadian Perspective on Alternative Delivery

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- EPCOR Utilities, Inc.
- Value for money
- Pricing risk
- Multiple criteria analysis



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## Traditional Design-Bid-Build (D-B-B)

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### Market Interest in D-B-B

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- Most engineering, construction and D/B firms expressed interest in D-B-B
- Most said D-B-B is suitable for all facilities
- D-B-B is well known and understood
- Most said alternative methods are preferable for all facilities due to complexity and size of projects

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## D-B-B and Engineering Firms

- Engineering firms recommended D-B-B or CMAR
- D-B-B provides most control over cost and quality
- D-B-B successful when:
  - Design documents are accurate and complete
  - A quality contractor is obtained
  - County procures experienced construction oversight
- But D-B-B prevents collaboration with construction firms

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## Construction Manager at Risk (CMAR)

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## General Comments

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- CMAR generally favored over D-B-B by the D/B firms, construction firms, and some engineering firms
- Important to have CM assist with preliminary design
- Engage CM concurrently with engineer or by 30% design stage; no later than 60% stage

## CMAR Services (1)

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- Constructability reviews of the design
- Cost estimating
- Value engineering throughout design
- Project management (procurement, construction, start-up, commissioning)
- Quality assurance
- Safety

## CMAR Services (2)

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- Procure long lead time items
- Permitting assistance
- Self perform work
- Fast track bid packages
- Responsible for quality of construction and conformance with design specifications

## CMAR Advantages (1)

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- Qualifications-based selection of CM
- Transfer of pricing risk through GMP
- Construction can begin before design is 100% complete
- Shorter delivery schedule, earlier price certainty than D-B-B

## CMAR Advantages (2)

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- Cost savings from constructability review and schedule optimization
- Competitive bid process retained
- Strong team relationship between parties
- Non-adversarial partnering of CM with owner, engineer

## Guaranteed Maximum Price (GMP)

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- Fix anywhere between 20-100% design
- Fixing at 60-90% is common
- Earlier fixing results in higher contingencies
- Consider shared savings as against GMP
- Specify assumptions
- Base contingency on unknowns, not a certain percentage of GMP

## CMAR Disadvantages

- Risk of design liability and project performance not transferred
- Schedule, cost savings, and risk transfer small in comparison to D/B, D/B/O
- Owner in middle of designer and contractor for resolving disputes
- Owner still primarily responsible for project outcomes and performance
- “Sticker shock” often occurs when GMP is set late

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## Design-Build (D/B)

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## D/B Advantages

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- D/B strikes balance between goals of:
  - Well built, high quality project, and
  - Opportunity for competitive, innovative proposals
- D/B is likely (relative to D-B-B, CMAR) to:
  - Shorten project delivery schedule
  - Reduce project costs
  - Transfer risks
- D/B & D/B/O Firms: D/B is superior to D-B-B, CMAR

## D/B Advantages (2)

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- Price known (fixed) at 30% design stage for basic intent w/o owner changes
- Single source guarantee of price, schedule, performance
- Owner removed from potential disputes between engineer and contractor
- Contractor responsible for project outcomes and performance

## Works Best When:

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- Owner is comfortable with performance-based solutions
- D/B contractor can innovate to reduce cost and manage its risk
- Project definition is clear
- Little chance of unforeseen circumstances
- No expected owner change orders after construction begins

## General Observations

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- Sureties play a key role, and insist on reasonable risk allocation
- Adding operations and financing to D/B diminishes number of potential participants
- Need to assure quality control, given the flexibility in design
- County should be open to other technologies if performance is guaranteed

## “Best Value” Selection

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- Capital cost price
- Non-price factors
  - Financial stability
  - Personnel qualifications
  - Company experience
  - Technical solution proposed
  - Business terms and conditions

## Design Requirements and Performance Guarantees

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- Base them on goals for each project
- Include measurable, objective criteria
- Utilize performance-based requirements
- Include owner's preferred equipment and process specifications
- State acceptable processes or technologies

## D/B and Initial Operations

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- Firms generally will not accept any responsibility for short term operations after project acceptance
- Warranties typically cover structures and equipment, not operations or performance
- D/B/O covers operations, but the operations term must be medium or long term

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## Single Step Design Build (D/B)

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## Single Step D/B (1)

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- Recommended by major D/B Firms
- Also known as “progressive”, “collaborative”, “negotiated” or “sole source” D/B
- 3 pre-qualified firms
- Can be integrated D/B firms, or engineering/construction JV
- Best qualified firm selected to negotiate a design contract
- May or may not lead to a D/B contract

## Single Step D/B (2)

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- Owner, owner’s representative and selected firm collaborate on design
- Selected firm is paid currently for design
- At 50-60% completed design, owner and firm negotiate a D/B contract
- If parties cannot agree on a D/B contract, firm completes design and project is done using D-B-B

## Single Step D/B (3)

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- If D/B contract is executed, firm self-performs 10-20% of work
- Remaining 80-90% is bid-out competitively
- Firm's fee for remaining design and self-perform work is sole-source negotiated

## Single Step D/B (4)

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- Potential advantages
  - Saves proposers the high cost of proposal preparation
  - Owner participates in design more extensively
  - Collaborative process between parties
  - Owner flexibility

## Single Step D/B (5)

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- Potential drawbacks
  - No precedent in Arizona
  - No competition for self-performed work
  - Owner may retain “design liability”, despite purported transfer, due to extensive role in design

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## Design Build Operate (D/B/O)

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## D/B/O Generally

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- D/B comments apply to D/B/O as well
- Limited number (4-5) of D/B/O contractors that can pursue large projects nationally
- D/B/O firms asserted projects costs lower, outcomes better than D-B-B
- Some preferred DBFO, DBFOO due to improved life-cycle costs, innovation

## D/B/O Advantages

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- Long term operating cost guarantee
- Long term performance guarantee
- Long term capital maintains risk transferred
- Owner not responsible for disputes between designer, builder, operator

## D/B/O and Existing Staff

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- Workforce protection measures must be clearly stated in RFP and D/B/O contract
- D/B/O contract operations may result in increased operating efficiencies and cost savings
- Protection of existing staff occurs through:
  - Open communication
  - Protection against layoffs
  - Improved compensation
  - Employee ownership
  - Improved working conditions
  - Career advancement opportunity

## Assuring Proper Long Term Maintenance

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- Facility condition evaluation at start and at end
- Condition requirements at end
- Scheduled repairs and replacements during term
- Capital replacement fund
- Periodic maintenance inspections
- Limited or full transfer of capital maintenance risk
- More onerous performance standards in last 5 years

## Service Fee Structure

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- Fixed annual service fee
- Annual adjustments based on basket of indexes
- Indexes reflect cost components such as labor and chemicals
- Electricity and gas rates “passed through”

## Security for Performance – “Single Guarantor”

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- Common practice
- Operating service company guarantees all design, construction, and operation obligations
- One point of responsibility
- Some said single guarantor is best structure
- One said single guarantor is not viable in today’s marketplace

## Security for Performance – “Successor Guarantor”

- D/B contractor guarantees performance until project acceptance
- Operating contractor then guarantees operations and performance
- Some willingness to help develop a workable structure
- No precedents
- May or may not expand number of potential D/B/O respondents

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## General Business Considerations for Alternative Project Delivery

Eric Petersen

Hawkins  
DELAFIELD & WOOD LLP

## Business Terms

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- Proper risk allocation is key
- A few prefer “standard” forms (industry prepared)
- Allocate risk to party best able to manage it
- Clearly define the work scope and contractual obligations
- Set measurable and achievable performance standards
- Include effective project administration and communication provisions
- Establish workable mechanisms for future changes

## County Retained Risks

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- Subsurface conditions
- Site contamination
- Change in law and regulations
- Land and easement acquisition
- Material cost escalation

## Limited Loss of Control under Alternative Delivery

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- Some loss of control in D/B, D/B/O over specific technical approaches and specifications
- Project definition and workscope assures best control
- Also handle contractually by proper risk allocation
- Design and construction oversight is important
- CMAR and single-step D/B offer more control by joint development of design and technologies
- Level of innovation is inversely proportional to level of specification

## Key Business Concerns

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- Contract must have a stated dollar limit on liability
- Reasonable liquidated damages
- Performance incentives
- No consequential damages
- Mutual indemnification
- Well-defined influent parameters and effluent standards
- Protection from commodity price escalation
- Clear start-up and testing criteria

## Ina Road Upgrade Challenges – “Condition Risk”

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- Availability and reliability of as-built documents
- Availability of operating data and maintenance
- Unknown remaining equipment life
- Continued operations during the upgrades
- Need for extensive interaction among parties
- Varied views on whether D/B, CMAR or D-B-B is best suited for upgrades
- Varied degrees of willingness to assume “condition risk”

## Permitting Risk

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- Broad range of willingness to assume
- Some object unless permitting problems are due to contractor fault
- Others will accept this risk unless problems are caused by agency responsiveness
- Many are willing generally to risk the permitability of their design

## Commodity Price Risk

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- Risk of fluctuations in steel, concrete, copper, fuel and other commodities
- Most believe that the lump-sum D/B price can be adjusted for commodity price risk using indexes
- Some question this and urge “open book” pricing
- Others state risk can be “hedged” by contractor locking in prices at proposal date

## “Sureties” Influence

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- Sureties consider design-build projects high risk
- Projects involving “process engineering risk” are more difficult to bond today
- Significant surety involvement in business terms
- Concerns reflect the “design liability” the sureties are bonding against

## Security for Performance

- Performance bonds (cover construction and process performance)
- Parent company guaranty, where contracting company is a subsidiary or has weak credit
- Letter of credit
- Requiring all 3 may discourage participation
- Professional liability insurance in D/B contracts

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## Procurement Process

Eric Petersen

Hawkins  
DELAFIELD & WOOD LLP

## General Procurement Process Advice

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- Open, fair, non-political
- Consider QBS process, with open-book bidding
- Short listing 3 firms is required and advisable
- Avoid protracted, costly processes
- Use clear selection criteria
- Knowledgeable selection committee

## Procurement Schedule

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- Issue a notice of intent in order to alert proposers
- Gain environmental clearances
- For responding to RFQ – 3 to 4 weeks
- For responding to RFP – 3 to 4 months
- Time for drafting RFQ, RFP and for evaluation and selecting contractor – highly variable



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# Project Financing

Harold Smith

## Market Interest

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- 16 Respondents provided discussion
- 11 provided substantive comments
- 3 provided significant detail
- 9 believe private financing is viable, 1 completely against, 1 is skeptical
- All suggested that Private Activity Bonds offered the greatest potential benefit
- Most claim successful experience with private financing of public assets
- Only 1 claimed significant experience with water/wastewater assets in the US

## Public vs. Private

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- Respondents generally believe that traditional tax-exempt debt is the most cost effective means of financing the PCWMD CIP.
- Respondents believe that it is in PCWMD's best interest to explore private financing.

## Delivery Methods

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- Private financing is not appropriate for D-B-B or CMAR.
- Private financing could work with a D/B, but would not be economical.
- DBOF and DBFOOT are the only viable options for private financing.

## Applicable Projects

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- Most applicable to “stand-alone” projects for which cash flows could be isolated.
- Some suggested private financing was more suitable for specialized components such as biosolids handling and power generation

## View of the Respondents

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	Public	Private
Ease of Use	✓	
Interest Rate	✓	
Issuance Cost	✓	
Impact on Schedule		✓
Impact on Debt Capacity		✓
Approval Process		✓
Project Life Cycle Cost		✓

## Typical Private Financing

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- Private non-recourse debt (85 to 90%)
- Equity (10 to 15%)
- Funding secured by revenues from long-term (20 to 50 years) D/B/O contract
- Interest and return on equity included in service fee.

## Potential Rate Impacts

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- Greater total payout with private financing.
- Creative structuring and longer term could reduce impacts.
- PABs would be equal to revenue bonds.



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# Biosolids

Jerry Bish

## Disposal – Market Interest

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- 9 Respondents addressed disposal
- 4 with substantive responses
- 3 with alternative/innovative processes
- 1 is leader in biosolids management nationwide.

## General Comments

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- Supported centralization of biosolids treatment
- Supported centrifuge dewatering process

## Applicable Projects

---

- Recommended heat drying for achieving Class "A" biosolids
  - Provided market exists
  - Regulatory issues/risks are addressed
- Suggested D/B, D/B/O, DBFO for delivery of Class "A" biosolids

## Special Considerations

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- Interest in County biosolids disposal operations
- Alternative / innovative processes for small scale projects
- Alternative / innovative processes largely unproven

## Biogas - Market Interest

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- 6 Respondents addressed biogas
- 3 with substantive responses
- All indicated third party interest
- Private financing available

## General comments

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- Supported generating power from biogas
- Supported scalping thermal energy for process utilization
- Biogas is an asset

## Special Considerations

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- Biogas power generation is not critical to wastewater treatment
- Green (biogas) power will reduce long term costs or generate revenue
- Large power utilities did not respond directly, but indirectly indicated interest

# Delivery Methods

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- D/B, D/B/O, DBF, DBFO



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## Alternative Technology

Jerry Bish

## Innovative or Alternative Technologies

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- 4 Respondents with Alternative or Innovative approaches
- 1 - wastewater treatment process
- 1 - sludge treatment process
- 1 - biosolids process system
- 1 - biosolids disposal

## Alternative Technology

---

- Wastewater treatment process
  - MBRs considered under wastewater treatment system evaluation
  - First Cost and Life – Cycle Costs more expensive than selected process

## Innovative/Alternative Process

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- **Sludge Treatment process**
  - Only one system exists
  - System in start-up and evaluation phase at small facility
  - Unproven claims
  - Dependent on aggressive chemicals (acids and bases - operate unfriendly)
  - Similar to another process that is costly

## Innovative/Alternative Process (2)

---

- **Biosolids process system**
  - Combines two unit operations to dewater biosolids to Class "A" reqts.
  - Utilizes solar drying and mechanical dewatering in tandem
  - Land intensive for large plants
  - System reliability
  - Odor potential

## Innovative/Alternative Process (3)

---

### ■ Biosolids Disposal

- Emerging from experimental development
- Applicable to small facilities
- Produces green energy (ethanol)
- No comment on final waste by-product disposal
- Operational reliability concerns (shared risk)
- Requires County buy back of end product
- Requires County to modify APP

## Innovative / Alternative Considerations

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### ■ Sludge treatment process

- Not proven

### ■ Biosolids process system

- Not required in short term / perhaps suited for small facilities / process needs verification

### ■ Biosolids disposal

- Perhaps suited for small plants / experimental / technical issues / not proven to be commercially viable / requires significant county involvement



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# Summary

Andy Richardson



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# Closing

Mike Gritzuk



# ROMP Implementation Plan

July 30, 2007

## ROMP Implementation Plan - Agenda

- 1. Opening Remarks/Review Agenda/Workshop Purpose
- 2. Funding Source and Rate Impacts Discussion
- 3. Implementation Schedule
- 4. Santa Cruz Interceptor Phase IV
- 5. Water Reclamation Campus (24 mgd + 8 mgd)
- 6. Ina Road WPCF (50 mgd) Upgrade/Expansion
- 7. Electrical Service Modifications
- 8. Ancillary Projects
- 9. Regional Facilities
- 10. Summary / Closing

### Purpose of Workshop

- Review and discuss private project financing and rate impacts for some of the facilities.
- Review and discuss the project delivery methods available to the County for the implementation of the Regional Optimization Master Plan (ROMP) facilities based on the County's Request for Expressions of Interest information. Address which method is appropriate for each project, and pros and cons of the various delivery methods.

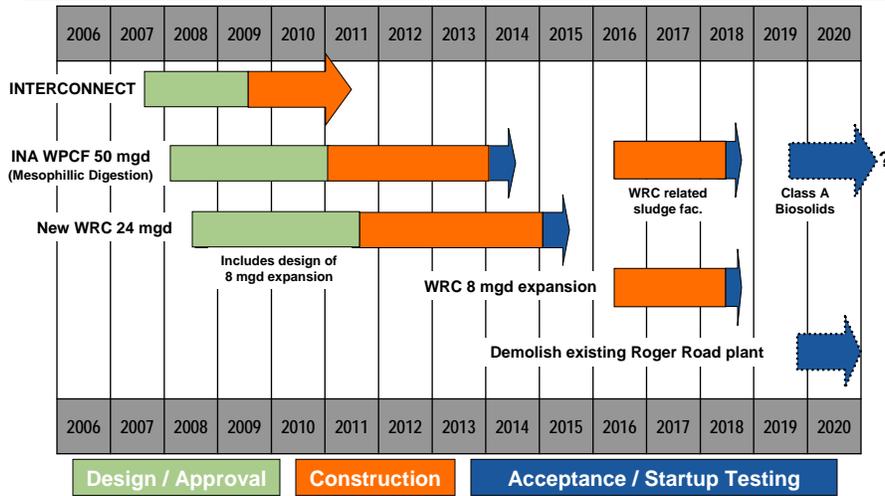
# Funding Source/Rate Impacts Discussion

## Implementation Details

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- Implementation Schedule
- Project delivery
- ROMP CIP projects
  - Conveyance
  - Treatment Facilities

# Project Sequence/Schedule

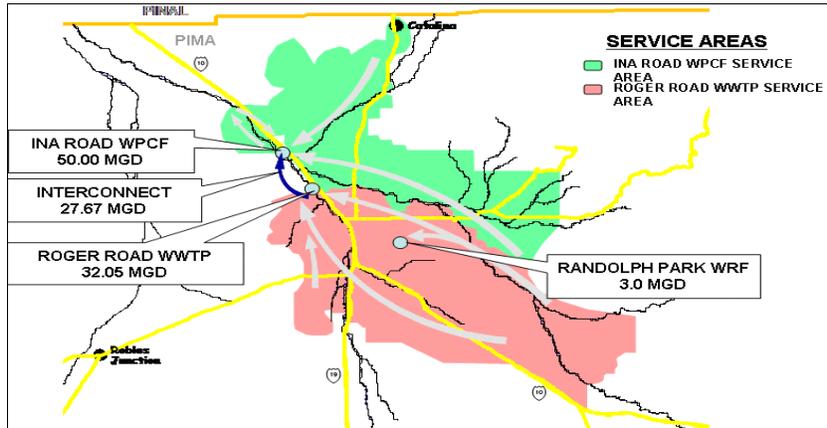


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# Santa Cruz Interceptor Phase IV (Plant Interconnect Pipeline)

Year 2030 Location of Major WWTPs Relative to the Metropolitan Tucson Service Area



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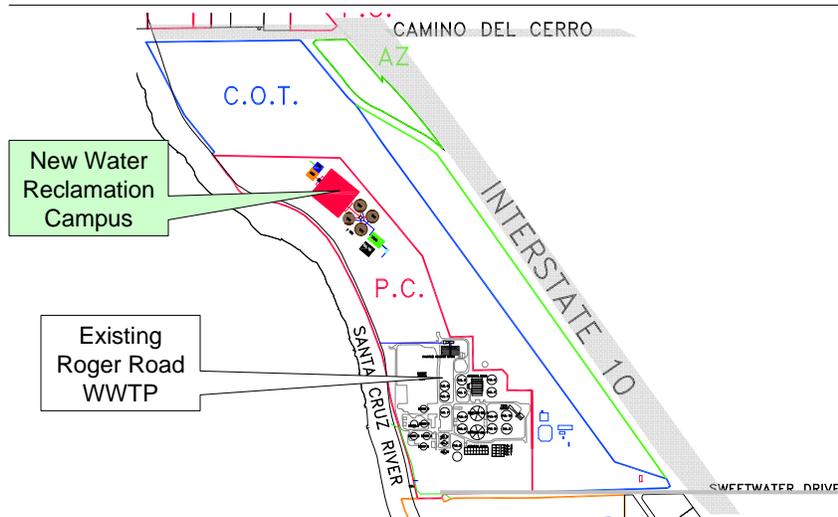
## Santa Cruz Interceptor Phase IV

Phase	Scope	Start	Complete	Project Delivery
1	Engineering – Santa Cruz Interceptor <i>Phase IV</i>	2007	2008	Professional
2	Construct – Santa Cruz Interceptor <i>Phase IV</i>	2008	2010	CMAR

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## Water Reclamation Campus – New 24-mgd + 8 mgd Facility

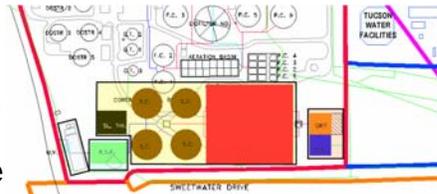


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## Water Reclamation Campus (24 mgd)

- Site preparation
- Headworks
- Bardenpho treatment (including clarifiers, solids thickening/pumping)
- Disinfection
- Administration/control building
- Standby power generation
- Future 8-mgd Bardenpho system (including clarifier)
- Future (8 mgd) gravity belt thicke
- Existing Roger Road WWTP demolition



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## Roger Road Projects

Phase	Scope	Start	Complete	Potential Project Delivery	Recommended Project Delivery
1	Engineering – 24-mgd + 8-mgd Facilities	2007/08	2010	Professional	
2	Construct – 24-mgd Facility	2011	2015	CMAR, D/B or D/B/O	
3	Engineering – Demolition Existing Facilities	2014	2015	Professional	
4	Demolition – Existing Facilities	2015	2017	D/B, CMAR or D-B-B	
5	Construct – 8-mgd Facility	2017	2020	CMAR or D-B-B	

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# Ina Road WPCF Upgrade/Expansion

- Site preparation
- Preliminary treatment expansion
- Primary clarifier
- Bardenpho treatment (including clarifiers)
- Demolish HPO and oxygen system
- Mesophilic digestion (5 new, 4 existing)
- Gravity thickening (primary sludge)
- Gravity belt thickening (WAS sludge)
- Centrifuge thickening/dewatering
- Sludge storage
- Disinfection
- Power unification
- Biogas power generation
- Future (WRC 8 mgd) mesophilic digester
- Future (WRC 8 mgd) thickening/dewatering fac.
- Future Class A biosolids facilities



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# Ina Road Projects

Phase	Scope	Start	Complete	Potential Project Delivery	Recommended Project Delivery
1	Engineering – 50-mgd + Biosolids + Future Biosolids (Class B) <ul style="list-style-type: none"> <li>■ New 12.5 mgd NdeN</li> <li>■ Rehab BNRAS</li> <li>■ New 25 mgd NdeN (HPO replacement)</li> <li>■ Biosolids handling and treatment</li> </ul>	2007/08	2010	Professional	
2	Construct – 50-mgd Facility <ul style="list-style-type: none"> <li>■ New 12.5 mgd NdeN</li> <li>■ Rehab BNRAS</li> <li>■ New 25 mgd NdeN (HPO replacement)</li> </ul>	2010	2014	CMAR or D-B-B	
3	Construct – Biosolids Facilities	2010	2014	CMAR or D-B-B	
4	Construct - Biosolids Facilities (WRC 8 mgd)	2017	2020	CMAR or D-B-B	
5	Engineering – Class A Biosolids	2018/19	2020	Professional	
6	Construct Class A Biosolids	After 2020	After 2020	D/B/O or D/B or CMAR	

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## Electrical Service Modifications

Phase	Scope	Start	Complete	Potential Project Delivery	Recommended Project Delivery
1	Engineering – Roger Road WRF Power/Standby Power	2008	2010	Professional	
2	Construct – Power Services for New Facility	2011	2013	D/B, CMAR or D-B-B	
3	Engineering – Ina Road Electrical Modifications	2008	2009	Professional	
4	Construct – Power Unification Facilities	2010	2011	CMAR or D-B-B	
5	Construct – Biogas Power Generation Facilities	2012	2014	D/B/O, D/B, CMAR or D-B-B	

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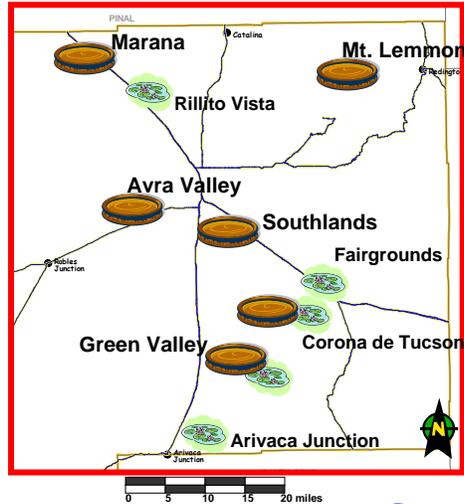
## Ancillary Projects

Phase	Scope	Start	Complete	Potential Project Delivery	Recommended Project Delivery
1	Architectural Services – Central Laboratory/General Admin Bldg.	2007	2010	Professional	
2	Construct – Central Laboratory	2011	2013	D/B, CMAR or D-B-B	
3	Construct – General Admin Bldg.	2013	2015	D/B, CMAR or D-B-B	
4	Engineering - Instrumentation & Control	2008	2009	Professional	
5	Construct – I&C	2010	2012	D/B, CMAR or D-B-B	
6	Construct - Interim Facilities @ Ina Road WPCF	2009	2010	CMAR or D-B-B	
7	Other				

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# Future Outlying Facilities



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# Outlying Facilities Expansion

- Southwest Region
  - Avra Valley WWTF
    - Expansion 1 (from 1.2 to 2.2 mgd)
    - Expansion 2 (from 2.2 to 4.0 mgd)
- Southeast Region
  - Corona de Tucson WWTF
    - Expansion 1 (from 0.3 to 1.3 mgd)
    - Expansion 2 (from 1.3 to 2.3 mgd)
    - Expansion 3 (from 2.3 to 3.3 mgd)
- Southland WWTF
  - Expansion 1 (from 0 to 2.0 mgd)
  - Expansion 2 (from 2.0 to 3.0 mgd)
  - Expansion 3 (from 3.0 to 4.0 mgd)
  - Expansion 4 (from 4.0 to 8.0 mgd)
  - Expansion 5 (from 8.0 to 12.0 mgd)

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# Outlying Facilities Expansion

- **South Region**
  - Green Valley WWTF
    - Expansion 1 (from 4.1 MGD to 6.1 MGD)
- **Northwest Region**
  - Marana WWTF
    - Expansion 1 (from 0.5 to 1.5 MGD)
    - Expansion 2 (from 1.5 to 3.0 MGD)
    - Expansion 3 (from 3.0 to 4.5 MGD)
    - Expansion 4 (from 4.5 to 6.0 MGD)
- **Mt. Lemmon WWTF**
  - No change unless changes in area restrictions

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# Outlying Facility Expansion

Facility	Expand 1	Expand 2	Expand 3	Expand 4	Rec'd PD
Arivaca Junction	-	-	-	-	-
Avra Valley	2006 / 2007	2008 / 2009	-	-	
Corona de Tucson	2006 / 2007	2018 / 2019	2027 / 2028	-	
Southlands <sup>(1)</sup>	2009 / 2010 <sup>(2)</sup>	2010 / 2011	2012 / 2013	2014 / 2015	
Green Valley	2011 / 2012		-	-	
Marana	2006 / 2007	2008 / 2009	2018 / 2019	2027 / 2028	
Mt. Lemmon <sup>(3)</sup>	TBD	TBD	TBD	TBD	
PC Fairgrounds	-	-	-	-	
Rillito Vista	-	-	-	-	

<sup>(1)</sup>Additional expansion in 2022/2023

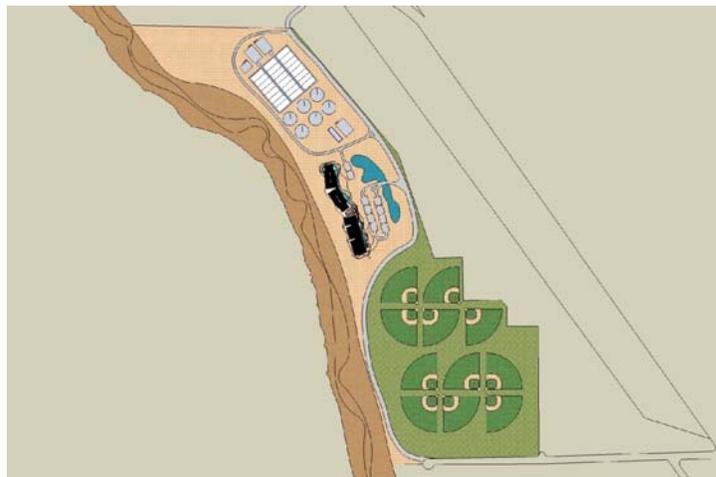
<sup>(2)</sup>By others

<sup>(3)</sup>Long range planning study in progress

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## New Water Reclamation Campus



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