CERTIFICATION AND FINANCING PROPOSAL

WATER MAIN REPLACEMENT ON CRAWFORD STREET NOGALES, ARIZONA

Revised: May 8, 2015

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INDEX

EXECUTIVE SUMMARY

WATER MAIN REPLACEMENT ON CRAWFORD STREET NOGALES, ARIZONA

Project: The project consists of the replacement of the Crawford Street water main in Nogales, Arizona (the "Project").

Project Objective: The purpose of the Project is to increase potable water service reliability and reduce incidents of service interruption and/or low pressure, contributing to the reduction of the risks associated with waterborne diseases.

Expected Project Outcome: The Project is expected to generate environmental and human health benefits related to the following Project outcomes:

- Provide access to safe and reliable drinking water services, directly benefiting 330 residential connections.
- Eliminate interruption of service and reduce water losses.

Population Benefitted: 1,178 residents of city of Nogales, AZ[1]

Project Sponsor: The City of Nogales, AZ

Project Cost: US$645,000

NADB Grant: US$500,000 from NADB's Community Assistance Program (CAP)

Uses & Sources of Funds:
(US$)

Uses	Amount	%
Construction*	$645,000	100.0
TOTAL	$645,000	100.0
Sources	**Amount**	**%**
City of Nogales, Arizona	$145,000	22.5
NADB CAP Grant	$500,000	77.5
TOTAL	$645,000	100.0

* Includes costs related to water main construction only.

[1] Population benefitted is estimated based on the number of service connections receiving improved service and 3.57 persons per household, as provided by the U.S. Census 2008-2012 projections.

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WATER MAIN REPLACEMENT ON CRAWFORD STREET NOGALES, ARIZONA

1. ELIGIBILITY

Project Type

The Project falls within the eligible sector of drinking water.

Project Location

The Project is located in the city of Nogales, Arizona, which is directly adjacent to the U.S.-Mexico border.

Project Sponsor and Local Authority

The public-sector project sponsor is the City of Nogales, AZ (the "Sponsor" or the "City"). Pursuant to Arizona Revised Statutes (A.R.S.) 9-511 and 9-514, the City of Nogales has the legal authority to operate and maintain water treatment, storage and distribution systems, as well as wastewater collection and treatment systems. The Public Works Department of the City of Nogales is authorized to provide water services to the community and is responsible for developing infrastructure improvement projects.

2. CERTIFICATION CRITERIA

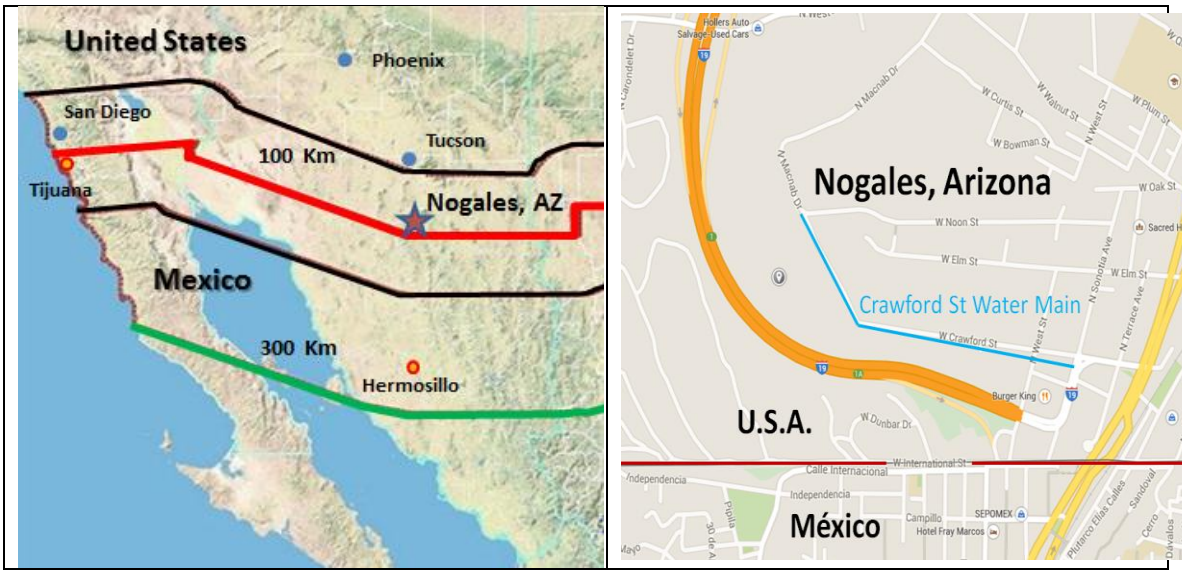
2.1. TECHNICAL CRITERIA

2.1.1. Project Description

Geographic Location

The city of Nogales is located in Santa Cruz County in the south eastern part of the state of Arizona, directly across the international border from Nogales, Sonora. Figure 1 shows the location of Nogales.

Figure 1
PROJECT VICINITY MAP



General Community Profile

According to the population projections of the U.S. Census Bureau, the city had 20,456 residents in 2013, having decreased at an average annual rate of -1.8% over the last ten years from a population of 20,837 in 2010.[2]

The city's economic activities are based primarily on trade, particularly winter produce imports. The unemployment rate is approximately 13%. The poverty level for Nogales is estimated at 36.5%, more than double the 17.2% poverty level estimated for the state. The median household income (MHI) is estimated at US$27,500, which is 45% less than the state MHI of US$50,256.[3]

The status of public services in Nogales, Arizona is described in the following table.

[2] U.S. Census Bureau, 2008-2012 projections.
[3] U.S. Census Bureau , 2006-2012 projections.

Table 1
BASIC PUBLIC SERVICES AND INFRASTRUCTURE

Water System			
Coverage	100% (10% Valle Verde Water Co. – private)		
Supply source	Groundwater (14 wells)		
Number of hookups	5,807 connections (5,112 residential; 695 commercial)		
Wastewater Collection			
Coverage	90% within city limits (remainder on septic systems)		
Number of connections*	5,068 (4,540 residential; 528 commercial)		
Wastewater Treatment			
Coverage	100%		
Treatment facilities	**Plant**	**Type**	**Capacity**
	Nogales International Wastewater Treatment Plant	Modified Ludzack - Ettinger	17.2 mgd
Solid Waste			
Collection coverage	100% city garbage collection, with approximately 12% diverted for recycling		
Final disposal	Landfill		
Street Paving			
Street paving coverage	98%		

Source: City of Nogales, 2014.
mgd = millions gallons a day
*Some commercial sewer connections serve multiple users. Service area outside city limits not included (i.e. Pena Blanca Highlands and Rio Rico)

Local Water and Wastewater Systems

Water and wastewater collection services are provided by the City through its Public Works Department. Currently, the City has two separate well field sources (WFS). The Santa Cruz River WFS is located northeast of the city and has six well sites that conveys water via a 16-inch transmission line to the Royal Road Tank (a 1-million-gallon reservoir) and the Crawford Tank (a 2-million-gallon reservoir). The City also provides potable water service to the Kino Springs area (outside the city limits) with five additional well sites along the Santa Cruz River.

Potrero Creek supports the other WFS, supplying three well sites that convey water via a 16-inch transmission line to the North Tank (a 1-million-gallon reservoir), High School Tank (a 1-million-gallon reservoir) and West Hill Tank (a 1-million-gallon reservoir). A fourth well site was taken offline due to contamination from tetrachloroethylene (TCE), a metal cleaning solvent discharged by United Musical Instruments (a factory no longer in operation).

The existing water main on Crawford Street consists of a 4-inch cast iron pipe with lead fittings and a 6-inch cement asbestos pipe that were installed in 1918. It is a shallow main that has experienced breaks over the last few decades, as well as service line repairs and replacements.

Breaks are now occurring more frequently, causing frequent water losses and interrupting service, which lends to a potential for water quality and public safety issues.

Wastewater collected in both Nogales, Arizona and Nogales, Sonora, is treated at the Nogales International Wastewater Treatment Plant (NIWWTP). The plant has a capacity 17.2 million gallons a day (mgd), of which approximately 9.9 mgd is allotted to serve Nogales, Sonora, as specified in International Boundary and Water Commission Minute 276. The NIWWTP has a remaining capacity of 7.3 mgd, which is used to serve Nogales, Arizona, and surrounding areas. Average wastewater flows from Nogales, Arizona, are currently estimated at 2.0 mgd. [4]

Project Scope and Design

The Project consists of the replacement of the Crawford Street water distribution main, which includes the following components:

- 8-inch DR 14 (CL 305) PVC water main – 2,967 linear feet
- 8-inch (CL 305) ductile iron water main – 15 linear feet
- 49 water connections and flow meters replaced
- 4 combination air release valve
- 24 gate valves
- 7 fire hydrants

Figure 2 shows the general location of the Project within the city of Nogales. The red line shows the alignment of the proposed Crawford Street water main replacement.

Figure 2
LOCATION OF PROJECT

[4] Source: U.S. IBWC, Nogales Field Office, NIWWTP operators.

The City has obtained the construction permit for the distribution line from the Arizona Department of Environmental Quality (ADEQ). According to the permit, construction must initiate before August 2015. Table 2 shows the proposed schedule for Project implementation milestones.

Table 2
PROJECT MILESTONES

Key Milestones	Status
Procurement	Anticipated: 3rd quarter 2015
Construction duration	Six months from initiation

2.1.2. Technical Feasibility

Design Criteria

The final design of the proposed Crawford St. water main replacement was completed in accordance with the minimum design criteria established by the ADEQ as outlined in the Arizona Administrative Code, which requires that the Project be constructed in accordance with the following regulations:

- *Arizona Revised Statute (A.R.S.), Title 49, Chapter 2*, which establishes water quality standards;
- *A.R.S. 49-104.B.10*, establishing construction requirements according to ADEQ;
- *Arizona Administrative Code, Section R18-4-119*, which establishes required fittings and valves;
- *Arizona Administrative Code, Title 18, Chapter 4 (ACC R18-4)*, relating to primary drinking water regulations; and
- *Arizona Administrative Code, Title 18, Chapter 5, Article 5 (ACC R18-5-502,504)*, which specifies the minimum design criteria and approval to construct.

The final design is also consistent with Engineering Bulletin No. 10, Chapter 1, section D.1. The final design was reviewed and approved by ADEQ, ATC file Number 20120156.

Selected Technology

During the final design process, technical alternatives for pipe diameter, material and alignment were evaluated. To identify the most appropriate technology, technical alternatives were evaluated pursuant to the following factors:

- Required connection points for the system components
- Investment cost
- Operation and maintenance cost
- Materials and equipment reliability

- Environmental impact
- Sustainable technology and practices

Pipe diameter was selected based on the required slope, capacity and pressure to prevent leakage and over-excavation. The analysis also considered using various pipe materials in compliance with applicable standards and regulations. High-density polyethylene and PVC pipes were eva908(c)-37(6 re)-034(an)4(d)3(1)-3thei3(r)29(cha(p)3pra0(eslati0(csre)-134(an)4(d)3(1)-3suiip)tabari)3(li)2

2.2. ENVIRONMENTAL CRITERIA

2.2.1. Compliance with Applicable Environmental Laws and Regulations

Applicable Laws and Regulations

The Project will be constructed within the same alignment and the City's right-of-way. There are no additional environmental clearance laws applicable to the Project.

Environmental Studies and Compliance Actions

The City of Nogales obtained construction approval from the ADEQ (File# 20120156). This certificate gives the City permission to install the 8-inch PVC waterline, as long as notice is given to ADEQ as required in A.R.S. Section 49-104.B.10.

Construction debris disposal and other environmental mitigation considerations have been included in the technical specifications for the Project and will be part of the Engineer's Joint Contract Documents Committee (EJCDC) Construction Documents. The City will negotiate the recycling of the replaced pipe materials with the selected contractor.

Pending Environmental Tasks and Clearances

There are no pending environmental tasks or authorizations.

Compliance Documents

The only formal authorization required for the Project was ADEQ Approval to Construct (ATC) File No. 20120156, which includes the filing of an Approval of Construction (AOC).

2.2.2. Environmental Effects / Impacts

Existing Conditions and Project Impact – Environmental

The proposed Project will provide access to safe and reliable drinking water services, directly benefiting 330 residential connections, as well as eliminate service interruptions and reduce water losses. The environmental impact resulting from Project implementation will be positive overall, given that this Project will contribute to better distribution of available potable water sources.

Mitigation of Risks

Only minor environmental impacts are anticipated during construction of the Project, provided that the work is carried out in accordance with best management practices. Potential impacts may be present during the construction phase and include the following:

- Fugitive dust emissions;
- Combustion gas emissions from construction machinery; and
- Temporary roadway blockages and presence of workers in the area.

Typical mitigation measures to be practiced:

- Application of water to reduce fugitive dust emissions;
- Vehicle tune-ups to reduce emissions; and
- Placement of warning signs to prevent potentially hazardous situations.

The water distribution line will be replaced along the same alignment, and there is no evidence of anthropological assets that might be affected by the installation of the waterline in the Project area. Should any historical and/or archeological remains be found, construction activities will be stopped and the appropriate department will be contacted for further assistance.

Natural Resource Conservation

Replacing the waterline will help prevent water losses resulting from frequent breaks and leaks in the aged infrastructure, thus conserving this vital resource in a drought prone area.

No Action Alternative

The no-action alternative was not considered viable. Failing to implement actions to improve the city's water distribution system would significantly limit the Public Works Department's ability to provide adequate water services in the Project area.

Existing Conditions and Project Impact – Human Health

Waterborne diseases are caused by pathogenic microorganisms that are directly transmitted as a result of inadequate wastewater disposal practices and unsafe water supplies. An individual can become ill after drinking water that has been contaminated with these organisms, eating uncooked foods that have been in contact with contaminated water, or through poor hygiene habits that contribute to the dissemination of diseases by direct or indirect human contact. Table 3 shows waterborne statistics for Santa Cruz County, Arizona.

Table 3
WATERBORNE STATISTICS FOR SANTA CRUZ COUNTY, ARIZONA

Disease	Number of Cases per Year				
	2009	2010	2011	2012	2013
Amebiasis	0	5	8	3	0
Campylobacteriosis	5	18	19	23	17
Cryptosporidiosis	0	0	0	0	0
Giardiasis	0	1	1	1	0
Shigellosis	6	12	10	10	7
Vibriosis	1	0	0	2	1

Source: Arizona Department of Health Services, Office of Infectious Disease Services.

Insufficient capacity and low pressure events in the water distribution system the city of Nogales can result in backflows and cross-contamination from wastewater, which may pose a health risk for water users. The Project will help prevent these problems by ensuring the transmission and distribution of safe drinking water throughout the city. According to the World Health

Organization, access to safe water and sanitation facilities, as well as better hygiene practices can reduce ascariasis-related morbidity by 29%.[5]

Transboundary Effects

Due to the proximity of Nogales, Arizona, to Nogales, Sonora (Figure 1), there are frequent border crossings between the two communities. Therefore, environmental and health conditions in Nogales, Arizona also affect Nogales, Sonora. The construction of the needed water distribution infrastructure will have a direct positive impact on the health of area residents. No negative transboundary impacts are anticipated.

2.3. FINANCIAL CRITERIA

2.3.1. Uses and Sources of Funds

The total estimated cost of the Project is US$645,000. The Project Sponsor requested a US$500,000 grant from NADB through its Community Assistance Program (CAP) to complete the financing of the Project. Table 4 presents a summary of total Project costs and the sources of funds.

Table 4
USES AND SOURCES OF FUNDS

Uses	Amount	%
Construction*	$ 645,000	100.0
TOTAL	**$ 645,000**	**100.0**
Sources	**Amount**	
City of Nogales, AZ	$ 145,000	22.5
NADB CAP grant	$ 500,000	77.5
TOTAL	**$ 645,000**	**100.0**

* Includes costs related to water main construction only.

2.3.2. Program Criteria Compliance

The Project complies with all CAP criteria. It is located within the U.S.-Mexico border region served by BECC and NADB, is being sponsored by a public sector entity and is in an environmental sector eligible for NADB financing. Additionally, as a water project, it is considered a priority under the CAP program. As shown in the above table, the Project Sponsor has agreed to cover more than the 10% minimum required under the program.

All necessary permits and authorizations have been obtained, and the Project Sponsor is ready to initiate bidding for construction once funding has been approved. Upon completion, an estimated 1,178 residents will directly benefit from improved drinking water services.

[5] WHO, Water, Sanitation and Hygiene Links to Health, Facts and figures updated November 2004 (http://www.who.int/water_sanitation_health/publications/facts2004/en/).

2.3.3. Conclusion

For the above reasons, NADB proposes providing a CAP grant of up to US$500,000 to the City of Nogales, Arizona, for construction of the Project.

3. PUBLIC ACCESS TO INFORMATION

3.1. PUBLIC CONSULTATION

BECC released the draft certification and financing proposal for a 14-day public comment period beginning April 23, 2015. The following Project documentation is available, upon request:

- Approval to Construct Water Facilities, ADEQ File No. 20120156, Aug. 31, 2012;
- Final Design for the 8-inch water main, Crawford Street – McNab Drive, prepared by CPE Consultants of Tucson, AZ, in 2012;
- Nogales Capital Improvement Program (CIP); and
- Pipe material selection methodology, Letter from City of Nogales, Arizona, dated May 16, 2014.

The public comment period ended on May 7, 2015, with no comments received.

3.2. OUTREACH ACTIVITIES

As part of the utility's normal business practices, upcoming projects are announced on the PWCON website. The Sponsor promoted the Project at several City Council meetings. The meetings were open to the general public, and meeting agendas, along with the resulting minutes, are made available for public review.

BECC conducted a media search to identify potential public opinion about the Project. No articles related to the Project were identified, and no opposition to the Project was detected in the media search or reported by the Project Sponsor.