2004 WATER USE EFFICIENCY PROPOSAL

Proposal Part One

Project Information Form

Statement of Work

Section 1: Relevance and Importance

Background:

The City owns its own electric, water and wastewater facilities and operates as an independent utility with an exclusive franchise.

The City of Needles (*City*") relies exclusively on the Colorado River for its water source. Sitting 25 miles south of Davis Dam (at Laughlin, Nevada), the Colorado River runs through the City.

The City has present perfected rights to 1,500 acre-feet (*"AF")* of water and consumes 60% of the amount diverted. The City obtains its water from wells, not directly from the Colorado River. These wells draw water from two sources: the ground water reservoir and seepage from the Colorado River. Engineering tests have determined that, on average, 70 % is attributable to Colorado River seepage, and 30% to ground water.

With a current population of approximately 5,400, the demands on those rights exceed that amount by 333 AF. The City ordered 333 AF in its 2005 water order to the U.S. Department of Interior's Bureau of Reclamation ("*BOR*").

That 333 AF shortfall is bridged by water from the Lower Colorado Water Supply Project ("*LCWSP*"). The City entered into a contract (Contract No. 2-07-30-W0280) with the BOR to act as Water Master, on the BOR's behalf, for 10,000 AF of LCWSP water pursuant to the *Lower Colorado Water Supply Act* passed by the U.S. Congress on November 14, 1986.

The LCWSP allows (per Section 2.14 of Contract No. 2-07-30-W0280) "water pumped from the Colorado River and consumptively used for domestic, municipal, individual, and recreational purposes by the Contractor and Other Project Beneficiaries on California lands in San Bernardino County"……..."to be exchanged for an equivalent quantity of replacement ground water to be pumped from the Project and delivered into the All-American Canal". Note: The contract was subsequently amended to include Riverside and Imperial Counties.

The City's principal goal is to introduce water conservation measures that will allow it to reduce its reliance on LCWSP water, and to sustain itself on the 1,500 AF of present perfected water rights it holds, thus providing more surplus water for the benefit of Other Project Beneficiaries (read: Subcontractors along the California side of the Colorado River between the Nevada state line and the Mexican border who have applied for, and been approved by the Colorado River Board – California, and the BOR for water-usage rights). Additionally, the City, as Contractor may, per Section 20 of Contract No. 2-07-30-W0280, forward sell unsubscribed capacity to "Non-Project Users" (e.g., Metropolitan Water District, San Diego County Water Authority, et al)

The City is looking to introduce a two-pronged approach to initiate water conservation:

- **Installing ultra low flow (*"ULF"*) aerators, showerheads, and toilets at all water service hook-ups within the city's service area.**
- **Introducing block water pricing with normative and quantitative billing information to the consumer**

The water conservation savings flowing from the use of ULF aerators, showerheads and toilets are well documented and quantifiable

The water conservation savings flowing from the initiation of block pricing are unknown due to the absence of actuarial data.

The project proposed would entail the replacement of existing fixtures with ULF counterparts, specifically; each household would receive a *Niagara Conservation Turnket Toilet Kit* containing:

Flapperless Toilet*

Toilet seat

Wax ring with sleeve

Brass bolts

Stainless steel braided flex hose

2.0 GPM *Prismiere* showerhead

1.5 gallon kitchen aerator

1.0 GPM bathroom aerator

* **Each toilet has its own serial number inside the tank lid, and on each box for easy tracking and accountability**

It is estimated that this program will save 500 AF annually, or 5,000 AF over 10 years. Reduction in water use is the premier requisite for sustainable life in the Lower Basin States (Arizona, Nevada and California), and is particularly compelling during the current drought – the worst in 500 years. California is mandated to cut back to 4.4 million acre-feet (*"MAF"*) per annum. While the estimated water conservation number of 500 AF annually for the City is only 1.1 ten-thousandths of 4.4 MAF, it is important to focus on the potential that CALFED will have to pump 500 AF less each year to Southern California. The replacement of high water use aerators, showerheads and toilets with ULF is a listed *Urban Best Management Practice* – per Section A-3, Eligible Projects, of the 2004 Solicitation Package, "Bay-Delta system benefits may be accomplished through the implementation of projects that demonstrate a potential of achieving California Bay – Delta Program objectives including: (a) Urban Best Management Practices (BMP's and PBMP's)"

"x. Residential ULFT replacement"

"xi. Replacement of Existing Water Use Appliances (except toilets and showerheads"

This project fits nicely with the initiation of block water pricing. Under block pricing the users who place the highest demand on the system pay the most. Those consumers who make nominal demands on the system should see a reduction in monthly billing amounts. The ULF program will assist in positioning more residents in the moderate usage category block.

Section 2: Technical/Scientific Merit, Feasibility

According to Niagara Conservation, each household aerator flows 3.5 gallons per minute. With an aerator in the kitchen, and one in the bathroom, the sum is 7 gallons per minute. At 30 minutes average faucet flow each day, the total gallons daily are 210, the annual is 76,650. The ULF counterpart numbers are 1.5 gallons per minute X 2 aerators, producing a sum that is less than one half that of a conventional aerator, with an annual aggregate of 27,375 gallons, resulting in conservation of 49,275 gallons.

With an average of 3 showers per day, at 6 gallons per minute per household, using a regular showerhead, Niagara Conservation shows that daily average flow is 117 gallons; annual is 42,705 gallons. With Niagara's 1.75 gallon per minute showerhead, the daily flow is 31.5 gallons; the annual number is 11,497 gallons, resulting in water conservation savings of 31,207 gallons.

This writer felt that Niagara Conservation's numbers for its toilet comparison were aggressive when compared with the actual numbers of the City of Los Angeles. Niagara's daily regular toilet flow is 66 gallons (6 gallons per flush, 11 flushes per

day). The City of Los Angeles study during the 1990's on actual ULF toilets installed within the City determined that 31.7 gallons was an accurate number. The numbers with Niagara Conservation's ULF toilet as a replacement are as follows: 17.6 gallons daily, and 6,424 gallons annually. Comparing that 6,424 gallons to the Los Angeles study's 11,570 yields a water conservation savings of 5,147 gallons (rounded)

The net annual gallons conserved, per the projections, are 85,629 per household, or 0.2628 AF. Over 10 years, that is 856,290 gallons per household. With 1,900 hookups, the representative water conservation savings would be 162,693,200 gallons annually (500 AF prox.), and 1,626,932,000 gallons in 10 years (5.000 AF prox.).

Task List and Schedule:

Start Date: 1/1/2006 Project End Date: December 31, 2008

Category	***Date***	***Task***
Public Notification of Project	**1/1/2006**	**Media outreach**
Determine Public Receptivity	**2/1/2006**	**Evaluate data**
Product Installation*	**2/1/2006**	**RFP for plumber(s)**

The following recurring tasks are operative for each successive wave of installations/deinstallations on an average schedule of 2.5 households per business day for 36 months

Set Order Schedule (# per month) As Required Contact vendor

Product Delivery/Installation	**As Required**	**Fed-Ex delivers to end-user resident; plumber installs; vendor and plumber bills City; City pays vendor; City requests reimbursement from Grantor**

Arrange for disposal	**As Required**	**Collect and crush old toilets, collect old fixtures for recycling. Deliver to the recycler.**

*** There may be occasions where the resident desires to install the ULF fixtures. Situations such as these will require close monitoring**

Project Costs:

***Materials*:**

$125.00 per kit multiplied by 1,900 hook-ups equals $237,500.00 less 10% discount for orders in excess of $200.00 equals $213,750.00 plus 7.75% California Sales Tax of $16,565.63 equals	**$**	**230,316.00**
***Administrative Burden Costs*:**		**146,000.00**
Plumber Labor:		**114,000.00**
Disposal of old fixtures (no recovery value imputed)		**5,000.00**
Total Cost (pre-10% Contingency margin)	**$**	**495,316.00**

Environmental Documentation:

The City of Needles has filed a Notice of Exemption and Preliminary Exemption Assessment with the Clerk of the Board of Supervisors of the County of San Bernardino under Exempt statuses 7 (b) -"Not a project"-, and (d) - "Categorical Exemption, Classes 7 and 8. See these documents in file.

Section 3: Monitoring and Assessment

Note: **The Water Efficiency Program and the Block Pricing Evaluation Program will not be operating simultaneously. That would contaminate the water conservation data (which program caused the change in water usage, and in what amount?) The Block Pricing Study Program requires a one- (1) year evaluation of water usage under the study. Once that study is concluded there will be a baseline actuarial usage data in place for the commencement of the Water Efficiency Program.**

Pre-Project conditions and databases:

The City operates the electric, water and the wastewater departments under the name Needles Public Utility Authority (*"NPUA"*). NPUA bills and collects on one monthly bill to each utility consumer, therefore it has historical data that may drawn electronically for any given time period. This establishes NPUA's ability to have valid baseline data, and the capability of measuring water and wastewater conservation.

Basic Assumptions:

1. **That there will be some measurable water and wastewater conservation as a result of installing ULF devices and toilets**

2. **That there will be a certain number of resident consumers who will opt out of the program**

Anticipated Accuracy of the Data to be Produced:

NPUA has independent, third party meter readers who input meter readings into a hand-held device (*"I-Tron"*) while at the meter. These I-Tron "reads" are then downloaded into NPUA's accounting system for billing and collection. This consumption data is available electronically to DWR, or any other third-party authority upon request (on a need-to-know basis).

Potential Impact of External Factors:

At present, weather appears to be the only external factor that may effect the Program due to the following:

- **There are no ULF devices on outside hose bibs**

- **Needles may experience temperatures that approach 130 degrees in July and August. Vegetation requires additional water during these hot, arid months in the Mohave Desert.**

Implementation/ Monitoring/Assessment Costs to the City:

• **Administrative Costs – Staff Time**	**$**	**146,000.00**
• **Water/Wastewater Accounting (No additional fixed or variable costs)**		**N/A**
Total	**$**	**146,000.00**

Section 4: Qualifications of the Applicants and Coordinators

Project Manager:

Barbara Darlington, P.E., Acting City Engineer – 20 years experience- on contract from Burns and McDonnell Engineers

Project Coordinator:

David G. Brownlee Jr., Administrative Assistant to the City Manager – 20 years private sector business experience, 2+ years water project experience/grant administration experience

See resumes attached.

Section 5: Substantiation of Disadvantaged Community Status

See *DP-3 Profile of Selected Economic Characteristics: 2000* – City of Needles in file

Section 6: Outreach, Community Involvement, and Acceptance

Needles is geographically remote from any other California city – Blythe is 100 miles to the south; Barstow is 140 miles to the west, therefore local government coordination has no bearing on the Project at hand.

Given the exigencies of getting this application submitted in a timely manner, the City has not polled the community with respect to this project. Therefore we have no way of knowing if there is any potential opposition to this Project.

Staff is aware that a similar project was successfully carried out in the City of Victorville.

Socio/Economic Factors: There are no training or hiring attributes to this program Estimated local economic impact would involve the services of local plumbers to install the ULF kits (projected to be $114,000.00).

Section 7: Innovation

While there will be no "innovative technologies or methodologies' deployed in this Project, it will be the first instance of the widespread, systemic use of ULF within the Tri-State area by a municipality, and indeed within the watershed. If successful, it should breed imitation along the river and multiply the water conservation savings for the entire region (30-mile trade area population exceeds 100,000). If Needles with 5,400 is able to save 500 AF in year 1, then a 100,000 population has the potential to save 9,259 AF in one year (500/5,400 X 100,000). The implications of the amount of additional Colorado River water flowing into California are wide reaching and beneficial.

Section 8: Benefits and Costs

See (in file)

- **Beneficial Cost Analysis of Niagara "*Cal 50/100 Kit*"**
- **Project Information Data**
- **Benefits to Cost Ratio**

- **Table C-1 Project Costs (Budget in Dollars)**
- **Table C-2 Annual Operations and Maintenance Costs**
- **Table C-3 Total Annual Project Costs**
- **Table C-4 Capital recovery Table**
- **Table C-5 Project Annual Benefits**
- **Table C-6 Project Annual Local Monetary Benefits**
- **Table C-7 Project Local Monetary Benefits and Project Costs**
- **Table C-8 Applicant's Cost Share and Description**

Applicant:

THE TABLES ARE FORMATTED WITH FORMULAS: FILL IN THE SHADED AREAS ONLY

Section A projects must complete Life of investment, column VII and Capital Recovery Factor Column VIII. Do not use 0.

Table C-1: Project Costs (Budget) in Dollars)

	Category (I)	Project Costs $ (II)	Contingency % (ex. 5 or 10) (III)	Project Cost + Contingency $ (IV)	Applicant Share $ (V)	State Share Grant $ (VI)	Life of investment (years) (VII	Capital Recovery Factor (VIII)	Annualized Costs $ (IX)
	Administration[1]								
	Salaries, wages	$0	0	$0	$0	$0	0	0.0000	$0
	Fringe benefits	$0	0	$0	$0	$0	0	0.0000	$0
	Supplies	$0	0	$0	$0	$0	0	0.0000	$0
	Equipment	$0	0	$0	$0	$0	0	0.0000	$0
	Consulting services	$0	0	$0	$0	$0	0	0.0000	$0
	Travel	$0	0	$0	$0	$0	0	0.0000	$0
	Other	$0	0	$0	$0	$0	0	0.0000	$0
(a)	Total Administration Costs	$0		$0	$0	$0			$0
(b)	Planning/Design/Engineering	$0	0	$0	$0	$0	0	0.0000	$0
(c)	Equipment Purchases/Rentals/Rebates/Vouchers	$0	0	$0	$0	$0	10	0.0000	$0
(d)	Materials/Installation/Implementation	$0	0	$0	$0	$0	0	0.0000	$0
(e)	Implementation Verification	$0	0	$0	$0	$0	0	0.0000	$0
(f)	Project Legal/License Fees	$0	0	$0	$0	$0	0	0.0000	$0
(g)	Structures	$0	0	$0	$0	$0	0	0.0000	$0
(h)	Land Purchase/Easement	$0	0	$0	$0	$0	0	0.0000	$0
(i)	Environmental Compliance/Mitigation/Enhancement	$0	0	$0	$0	$0	0	0.0000	$0
(j)	Construction	$0	0	$0	$0	$0	0	0.0000	$0
(k)	Other (Specify)	$0	0	$0	$0	$0	0	0.0000	$0
(l)	Monitoring and Assessment	$0	0	$0	$0	$0	0	0.0000	$0
(m)	Report Preparation	$0	5	$0	$0	$0	0	0.0000	$0
(n)	**TOTAL**	$0		$0	$0	$0			$0
(o)	Cost Share -Percentage				0	100			

1- excludes administration O&M.

Applicant: **CITY OF NEEDLES**

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Table C-2: Annual Operations and Maintenance Costs

Operations (1) (I)	Maintenance (II)	Other (III)	Total (IV) (I + II + II)
$0	$0	$0	$0

(1) Include annual O & M administration costs here.

Table C-3: Total Annual Project Costs

Annual Project Costs (1) (I)	Annual O&M Costs (2) (II)	Total Annual Project Costs (III) (I + II)
$74,045	$0	$74,045

(1) From Table C-1, row (n) column (IX)
(2) From Table C-2, column (IV)

Table C- 4: Capital Recovery Table (1)

Life of Project (in years)	Capital Recovery Factor
1	1.0600
2	0.5454
3	0.3741
4	0.2886
5	0.2374
6	0.2034
7	0.1791
8	0.1610
9	0.1470
10	0.1359
11	0.1268
12	0.1193
13	0.1130
14	0.1076
15	0.1030
16	0.0990
17	0.0954
18	0.0924
19	0.0896
20	0.0872
21	0.0850
22	0.0830
23	0.0813
24	0.0797
25	0.0782
26	0.0769
27	0.0757
28	0.0746
29	0.0736
30	0.0726
31	0.0718
32	0.0710
33	0.0703
34	0.0696
35	0.0690
36	0.0684
37	0.0679
38	0.0674
39	0.0669
40	0.0665
41	0.0661
42	0.0657
43	0.0653
44	0.0650
45	0.0647
46	0.0644
47	0.0641
48	0.0639
49	0.0637
50	0.0634

(1) Based on 6% discount rate.

Applicant: **CITY OF NEEDLES**

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Table C-5 Project Annual Physical Benefits (Quantitative and Qualitative Description of Benefits)

	Qualitative Description - Required of all applicants[1]				**Quantitative Benefits - where data are available[2]**
	Description of physical benefits (in stream flow and timing, water quantity and water quality) for:	Time pattern and Location of Benefit	Project Life: Duration of Benefits	State Why Project Bay Delta benefit is Direct[3] Indirect [4] or Both	Quantified Benefits (in-stream flow and timing, water quantity and water quality)
Bay Delta	500 AF less Bay-Delta Flow	Annually	10 years	Direct	Water Quauntity Enhancement
Local				**Not applicable.**	

[1] The qualitative benefits should be provided in a narrative description. Use additional sheet.

[2] Direct benefits are project outcomes that contribute to a CALFED objective within the Bay-Delta system during the life of the project.

[3] Indirect benefits are project outcomes that help to reduce dependency on the Bay-Delta system. Indirect benefits may be realized over time.

[4] The project benefits that can be quantified (i.e. volume of water saved or mass of constituents reduced) should be provided.