

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form**

1. Applying for (select one): (a) Prop 13 Urban Water Conservation Capital Outlay Grant
 (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant
 (c) DWR Water Use Efficiency Project
2. Principal applicant (Organization or affiliation): City of Saratoga
3. Project Title: Irrigation System Efficiency
4. Person authorized to sign and submit proposal:
- | | |
|-----------------|---|
| Name, title | <u>John Cherbone, Director of</u> |
| Mailing address | <u>Public Works</u> |
| | <u>13777 Fruitvale Ave.,</u> |
| Telephone | <u>Saratoga, CA 95070-5199</u> |
| Fax. | <u>408-868-1241</u> |
| E-mail | <u>408-868-1280</u> |
| | <u>Jcherbone@saratoga.ca.us</u> |
5. Contact person (if different):
- | | |
|------------------|-------|
| Name, title. | _____ |
| Mailing address. | _____ |
| Telephone | _____ |
| Fax. | _____ |
| E-mail | _____ |
6. Funds requested (dollar amount): \$418,270
7. Applicant funds pledged (dollar amount): \$83,654 in-kind
8. Total project costs (dollar amount): \$501,924
9. Estimated total quantifiable project benefits (dollar amount): \$36,630year
- Percentage of benefit to be accrued by applicant: 53%
- Percentage of benefit to be accrued by CALFED or others: 47%

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:**

A. Project Information Form (continued)

10. Estimated annual amount of water to be saved (acre-feet): 47
- Estimated total amount of water to be saved (acre-feet):
- Over 10 years 470 +
- Estimated benefits to be realized in terms of water quality, in-stream flow, other: Water quantity savings
11. Duration of project (month/year to month/year): 11/02-5/03
12. State Assembly District where the project is to be conducted: 24
13. State Senate District where the project is to be conducted: 11 & 13
14. Congressional district(s) where the project is to be conducted: 15th
15. County where the project is to be conducted: San Mateo
16. Date most recent Urban Water Management Plan submitted to the Department of Water Resources: May, 2001
17. Type of applicant (select one):
- Prop 13 Urban Grants and Prop 13 Agricultural Feasibility Study Grants:
- (a) city
 - (b) county
 - (c) city and county
 - (d) joint power authority
 - (e) other political subdivision of the State, including public water district
 - (f) incorporated mutual water company
 - (g) investor-owned utility
 - (h) non-profit organization
 - (i) tribe
 - (j) university
 - (k) state agency
 - (l) federal agency
- DWR WUE Projects: the above entities (a) through (f) or:
18. Project focus:
- (a) agricultural
 - (b) urban

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)**

19. Project type (select one):
Prop 13 Urban Grant or Prop 13
Agricultural Feasibility Study Grant
capital outlay project related to:

- (a) implementation of Urban Best Management Practices
- (b) implementation of Agricultural Efficient Water Management Practices
- (c) implementation of Quantifiable Objectives (include QO number(s))
-
- (d) other (specify)
-

DWR WUE Project related to:

- (e) implementation of Urban Best Management Practices
- (f) implementation of Agricultural Efficient Water Management Practices
- (g) implementation of Quantifiable Objectives (include QO number(s))
- (h) innovative projects (initial investigation of new technologies, methodologies, approaches, or institutional frameworks)
- (i) research or pilot projects
- (j) education or public information programs
- (k) other (specify)
-

20. Do the actions in this proposal involve physical changes in land use, or potential future changes in land use?

- (a) yes
- (b) no

If yes, the applicant must complete the CALFED PSP Land Use Checklist found at http://calfed.water.ca.gov/environmental_docs.html and submit it with the proposal.

Project Summary

The project is located in the City of Saratoga and encompasses twenty-three (23) public sites. The sites include median strips, civic center, parks, historic sites, community center and the library.

The nature of this project is to correct irrigation systems that use excessive amounts of water. The proposed system can save approximately 40% to 50% of water usage, and greatly reduce labor, fuel and equipment costs.

The goals and objectives are to replace city-wide irrigation systems with a fully automated system that includes a central computer, software, weather station, field satellite controllers, flow sensors, master valves, radio equipment and communication cable.

The methods and procedures to be utilized for total irrigation system improvements and water conservation include all hardware required for a fully operational system including, but not limited to, the central computer, software, weather station, field satellite controllers, flow sensors, master valves, radio equipment and communication cable.

Key features of the system include:

- automatic daily re-programming of all field satellites based on site weather conditions
- automatic shut-down of all field satellites due to rainfall or excessive wind
- automatic shut-down of systems with unscheduled, unwanted or excessive flow
- irrigation programming and monitoring of all field satellites from the central computer
- tracking and reporting of water consumption and irrigation component failures
- access to the central computer from anywhere via computer and phone modem

Expected outcomes will be a complete, electronically controlled city-wide irrigation system which will reduce water consumption by at least 40%. In addition, we expect to save tax payers dollars by reducing the amount of time it takes to physically monitor parks for irrigation system deficiencies, broken sprinkler heads and major breaks, as they occur.

Costs for the proposed project are expected to be \$418,270 (excludes an in-kind match of approximately \$83,654). *In an effort to maximize grant funds, we are willing to break our total project costs into segments. We could do half of the 23 Tasks for about \$200,000).*

Benefits will be the savings of approximately forty-seven (47) acre-feet of water per year. We will also experience savings in manpower, transportation and equipment with the new opportunity to access the systems operation electronically. The proposed upgrade of the entire system will provide for long-term cost savings to the user and supplier.

A. Scope of Work-Relevance & Importance

1. Nature, scope and objective of the project is to install an electronically controlled irrigation system which will improve overall system effectiveness. It will eliminate the current method of trouble shooting which entails traveling to various sites while attempting to rectify the problems through visual surveillance.

2. The critical local water issue is water conservation due to unpredictable water supplies. Due to the concentrated populations of the greater San Jose Area and the Silicon Valley, water demand continues to increase. The issue of water conservation is critical to the public's welfare.

The project is consistent with water conservation efforts city and countywide.

B. Scope of work-Technical/scientific merit, feasibility, monitoring & assessment

1. The methods, procedures and technical adequacy of this proposal is utilization of high tech equipment critical for water conservation. We are ready to proceed as soon as funds are awarded. Reputable firms have been contacted and are ready to proceed with the installation.
2. Task list and schedule, deliverable items, due dates, project costs for each task, quarterly expenditures, start and completion dates of each task

<u>Task & Items</u>	<u>Due Dates</u>	<u>Costs</u>	<u>Quarter</u>	<u>Start/End Date</u>
#1 Master	11/02		4th	10-11/02
Rain Master Commercial Grade				
Computer Hardware		\$ 2,900.00		
ET-based Water Management				
Central Software		\$ 6,800.00		
Base Radio Station Assembly		\$ 3,660.00		
Evolution Weather Center With ET, Rain & Wind Gauges		\$ 7,514.00		
Radio Site Survey, Mapping & FCC Application Fee		\$ 1,500.00		
Promax Remote Trans. & Recvr. in Carrying Case		\$ 959.40		
Subtotal		\$ 23,333.40		
8.00% Sales Tax		\$ 1,866.67		
Installation Labor		\$ 4,180.00		
<u>Admin./Survey/Design/Cont. (15%)</u>		<u>\$ 4,407.01</u>		
Total		\$ 33,787.08		
#2 Congress Springs	11/02		4th	10-11/02
Evolution DX2 Satellite Controller-Painted				
Wall Mount-18 Station With Radio Board		\$ 2,815.00		
(2) Evolution DX2 Satellite Controller-Painted				
Wall Mount-36 Station With Hardwire Board		\$ 8,456.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O.				
Master Valve		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 50.00		
Subtotal		\$ 15,533.00		
8.00% Sales Tax		\$ 1,242.64		
Installation Labor		\$ 7,710.00		
<u>Admin./Survey/Design/Cont. (15%)</u>		<u>\$ 3,672.85</u>		
TOTAL		\$ 28,158.49		

Task & Items	Due Dates	Costs	Quarter	Start/End Date
#3 Civic Center	12/02		4th	10-12/02
Evolution DX2 Satellite Controller-Stainless				
Wall Mount-18 Station With Radio Board		\$ 4,794.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O. Master Valve		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 12.50		
Subtotal		\$ 9,018.50		
8.00% Sales Tax		\$ 721.48		
Installation Labor		\$ 5,830.00		
Admin./Survey/Design/Cont. (15%)		\$ 2,335.50		
Total		\$ 17,905.48		
#4 El Quito Park	12/02		4th	10-12/02
Evolution DX2 Satellite Controller-Stainless				
Metered Box-24 Station With Radio Board		\$ 6,665.00		
Radio and High Gain Antenna Assembly		\$ 3,487.00		
2" Flow Sensor, Circuit Board & N.O. Master Valve		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 25.00		
Subtotal		\$ 11,788.00		
8% Sales Tax		\$ 943.04		
Installation Labor		\$ 5,830.00		
Admin./Survey/Design/Cont. (15%)		\$ 2,784.16		
Total		\$ 21,345.20		
#5 Kevin Moran	12/02		4th	10-12/02
Evolution DX2 Satellite Controller-Stainless				
Metered Box-24 Station With Radio Board		\$ 6,665.00		
Radio and High Gain Antenna Assembly		\$ 3,487.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 75.00		
Subtotal		\$ 11,838.00		
8.00% Sales Tax		\$ 947.04		
Installation Labor		\$ 7,020.00		
Admin./Survey/Design/Cont. (15%)		\$ 2,970.76		
Total		\$ 22,775.80		
#6 Medians@ Cox & Camiel	2/03		1st	01-02/03
Evolution DX2 Satellite Controller-Stainless Wall				
Mount-12 Station With Radio Board		\$ 3,204.00		
Radio and High Gain Antenna Assembly		\$ 3,487.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 5.00		
Subtotal		\$ 8,307.00		
8.00% Sales Tax		\$ 664.56		
Installation Labor		\$ 3,840.00		
Admin./Survey/Design/Cont. (15%)		\$ 1,921.73		
Total		\$ 14,733.29		

Task & Items	Due Dates	Costs	Quarter	Start/End Date
#7 Warren Hutton House	2/03		1st	01-02/03
Evolution DX2 Satellite Controller-Stainless Wall Mount-18 Station With Radio Board		\$ 3,415.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 5.00		
Subtotal		\$ 7,632.00		
8.00% Sales Tax		\$ 610.56		
Installation Labor		\$ 3,340.00		
Admin./Survey/Design/Cont. (15%)		\$ 1,989.16		
Total		\$ 13,319.94		
#8 Beauchamps Park	2/03		1st	01-02/03
Evolution DX2 Satellite Controller-Retro Back Panel-18 Station With Radio Board		\$ 2,815.00		
Evolution DX2 Satellite Controller-Retro Back Panel-18 Station With Hardwire Board		\$ 2,629.00		
Radio and High Gain Antenna Assembly		\$ 3,487.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 75.00		
Subtotal		\$ 10,617.00		
8.00% Sales Tax		\$ 849.36		
Installation Labor		\$ 6,640.00		
Admin./Survey/Design/Cont. (15%)		\$ 2,715.95		
Total		\$ 20,822.31		
#9 S/S Medians@Reid	2/03		1st	01-02/03
Evolution DX2 Satellite Controller-Retro Back Panel-18 Station With Radio Board		\$ 2,815.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 5.00		
Material Subtotal		\$ 7,032.00		
8.00% Sales Tax		\$ 562.56		
Installation Labor		\$ 2,960.00		
Admin./Survey/Design/Cont. (15%)		\$ 1,583.18		
Total		\$ 12,137.74		
#10 Library	2/03		1st	01-02/03
Evolution DX2 Satellite Controller-Stainless Wall Mount-18 Station With Radio Board		\$ 3,415.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 75.00		
Subtotal		\$ 7,702.00		
8.00% Sales Tax		\$ 616.16		
Installation Labor		\$ 8,140.00		
Admin./Survey/Design/Cont. (15%)		\$ 2,468.72		
Total		\$ 18,926.88		

Task & Items	Due Dates	Costs	Quarter	Start/End Date
#11 Gardiner Park	2/03		1st	01-02/03
Evolution DX2 Satellite Controller-Stainless Metered Box-12 Station With Radio Board		\$ 5,934.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 25.00		
Subtotal		\$ 10,171.00		
8.00% Sales Tax		\$ 813.68		
Installation Labor		\$ 3,720.00		
Admin./Survey/Design/Cont. (15%)		\$ 2,205.70		
Total		\$ 16,910.38		
#12 Brookglen Park	2/03		1st	01-02/03
Evolution DX2 Satellite Controller-Retro Panel 12 Station With Radio Board		\$ 2,568.00		
Radio and High Gain Antenna Assembly		\$ 3,487.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 5.00		
Subtotal		\$ 7,671.00		
8.00% Sales Tax		\$ 613.68		
Installation Labor		\$ 3,460.00		
Admin./Survey/Design/Cont. (15%)		\$ 1,761.70		
Total		\$ 13,506.38		
#13 Medians@ Cox & Camiel	3/03		1st	02-03/03
Evolution DX2 Satellite Controller-Stainless Wall Mount-12 Station With Radio Board		\$ 3,204.00		
Radio and High Gain Antenna Assembly		\$ 3,487.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 5.00		
Subtotal		\$ 8,307.00		
8.00% Sales Tax		\$ 664.56		
Installation Labor		\$ 3,840.00		
Admin./Survey/Design/Cont. (15%)		\$ 1,921.73		
Total		\$ 14,733.29		
#14 Foothill Park	3/03		1st	02-03/03
Evolution DX2 Satellite Controller-Stainless Top Entry-12 Station With Radio Board		\$ 4,052.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 25.00		
Subtotal		\$ 8,289.00		
8.00% Sales Tax		\$ 663.12		
Installation Labor		\$ 4,330.00		
Admin./Survey/Design/Cont. (15%)		\$ 1,992.32		
Total		\$ 15,274.44		

Task & Items	Due Dates	Costs	Quarter	Start/End Date
#15 Historical park	3/03		1st	02-03/03
Evolution DX2 Satellite Controller-Stainless Wall				
Mount-12 Station With Radio Board		\$ 3,204.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 25.00		
Subtotal		\$ 7,441.00		
8.00% Sales Tax		\$ 595.28		
Installation Labor		\$ 6,140.00		
Admin./Survey/Design/Cont. (15%)		\$ 2,126.44		
Total		\$ 16,302.72		
#16 Medians@ Via Monte	3/03		1st	02-03/03
Evolution DX2 Satellite Controller-Stainless Top				
Entry-12 Station With Radio Board		\$ 4,052.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 125.00		
Subtotal		\$ 8,389.00		
8.00% Sales Tax		\$ 671.12		
Installation Labor		\$ 12,330.00		
Admin./Survey/Design/Cont. (15%)		\$ 3,208.52		
Total		\$ 24,598.64		
#17 Medians@ Dagmar	3/03		1st	02-03/03
Evolution DX2 Satellite Controller-Retro Back				
Panel-12 Station With Radio Board		\$ 2,568.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 5.00		
Subtotal		\$ 6,785.00		
8.00% Sales Tax		\$ 582.80		
Installation Labor		\$ 2,960.00		
Admin./Survey/Design/Cont. (15%)		\$ 1,543.17		
Total		\$ 11,870.97		
#18 Medians@ Cox	5/03		2nd	04-05/03
Evolution DX2 Satellite Controller-Stainless Top				
Entry-12 Station With Radio Board		\$ 4,052.00		
Radio and High gain Antenna Assembly		\$ 3,487.00		
2" Flow Sensor & N.O. Master Vlv.		\$ 667.00		
Evolution Shielded Sensor Cable		\$ 200.00		
Subtotal		\$ 8,406.00		
8.00% Sales Tax		\$ 672.48		
Installation Labor		\$ 17,830.00		
Admin./Survey/Design/Cont. (15%)		\$ 4,036.27		
Total		\$ 30,944.72		

Task & Items	Due Dates	Costs	Quarter	Start/End Date
#19 Medians@ Kosich	5/03		2nd	04-05/03
Evolution DX2 Satellite Controller-Retro Back				
Panel-12 Station With Radio Board		\$ 2,568.00		
Radio and High Gain Antenna Assembly		\$ 3,487.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 25.00		
Subtotal		\$ 7,691.00		
8.00% Sales Tax		\$ 615.28		
Installation Labor		\$ 4,260.00		
Admin./Survey/Design/Cont. (15%)		\$ 1,884.94		
Total		\$ 14,451.22		
#20 Medians@ Vineyard	5/03		2nd	04-05/03
Evolution DX2 Satellite Controller-Retro Back				
Panel-12 Station With Radio Board		\$ 2,568.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 5.00		
Subtotal		\$ 6,785.00		
8.00% Sales Tax		\$ 542.80		
Installation Labor		\$ 2,960.00		
Admin./Survey/Design/Cont. (15%)		\$ 1,543.17		
Total		\$ 11,830.97		
#21 Community Center	5/03		2nd	04-05/03
Evolution DX2 Satellite Controller-Stainless Wall				
Mount-6 Station With Radio Board		\$ 2,920.00		
Radio and Dome Antenna Assembly		\$ 2,601.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 5.00		
Subtotal		\$ 7,137.00		
8.00% Sales Tax		\$ 570.96		
Installation Labor		\$ 3,340.00		
Admin./Survey/Design/Cont. (15%)		\$ 1,657.19		
Total		\$ 12,705.15		
#22 Ravenwood Park	5/03		2nd	04-05/03
Evolution DX2 Satellite Controller-Stainless Top				
Entry-6 Station With Radio Board		\$ 3,794.00		
Radio and High gain Antenna Assembly		\$ 3,487.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 5.00		
Subtotal		\$ 8,897.00		
8.00% Sales Tax		\$ 711.76		
Installation Labor		\$ 4,030.00		
Admin./Survey/Design/Cont. (15%)		\$ 2,045.81		
Total		\$ 15,684.57		

Task & Items	Due Dates	Costs	Quarter	Start/End Date
#23 Wildwood Park	5/03		2nd	04-05/03
Evolution DX2 Satellite Controller-Painted Wall				
Mount-6 Station With Radio Board		\$ 2,321.00		
Radio and High Gain Antenna Assembly		\$ 3,487.00		
2" Flow Sensor, Circuit Board & N.O. Master Vlv.		\$ 1,611.00		
Evolution Shielded Sensor Cable		\$ 50.00		
Subtotal		\$ 7,469.00		
8.00% Sales Tax		\$ 597.52		
Installation Labor		\$ 5,450.00		
Admin./Survey/Design/Cont. (15%)		\$ 2,027.48		
Total		\$ 15,544.00		
Grand Total		\$418,270 (rounded)		

- Monitoring and assessment, list of project-specific performance measures, how data will be handled and made available, list of expected products/outcomes.

City staff will provide complete overview and inspection of work performed by a qualified vendor. City engineers will review all designs and procedures to insure proper installation.

The project-specific performance measures will be timely installation of hardware necessary for each task listed in the budget.

The actual data scanned and compiled by the master computer will be processed daily and available 24 hours a day. This unique system monitors and records all facets of the system's operations and activities.

The expected outcome will be reliable data which can be used to determine total and incremental water loss, system reliability, trouble shooting and adaptability to modify the system for specific water demands.

- Preliminary plans and specs, certification that project is feasible

Technical data sheets are available from the manufacturer and some have been attached to this report for review. The list of agencies utilizing this system is quite extensive and these agencies have had this system in operation for several years thus insuring that our use is also feasible.

C. Qualifications of the applicants and cooperators

- Resume of project manager (attached)
- Role of external cooperators (attached)

D. Benefits and costs

- Budget breakdown and justification

Each task and associated items are specified in item B. 2. The figures are derived from the manufacturer and the City of Saratoga has included a 15% cost for Administration, Survey, Design and Contingency.

Considering the fact that the grant program allows for a maximum contingency of 15%, we have been most conservative in our costs and offer a significant contribution toward the success of this project.

The figures represented in the budget are a direct estimate from the vendor. Upon award of funds to proceed with this project, the city will initiate a formal bid process. It is anticipated that costs could be less via the bid process.

a.	Direct labor	Incl.
b.	Salaries	Incl.
c.	Benefits	Incl.
d.	Travel	Incl.
e.	Supplies & expendables	Incl.
f.	Services or Consultants -	\$130,140
g.	Equipment	\$233,707
h.	Other direct costs –	\$54,423 (project management, inspection, validation of costs, report prep., presentations, contingency, design, and survey).
i.	Total direct costs	\$363,847 (items a thru g)
j.	Indirect costs –	Incl.
k.	Total costs	\$418,270

2. Cost-Sharing (match)

In general terms, administration, design and survey would cost out at approximately 25% of total project costs and contingency would be 10%. The city match computes to approximately 20% of total project costs and is not reflected in the budget figures. Thus, 20% of \$418,270 = \$83,654. Ancillary services within this 20% figure represent accounting, field surveys, progress reports, administration, supervision, contract administration and general staff review.

3. Benefit summary & breakdown – list expected project outcomes

Outcomes will be the successful installation of all items listed in the budget such as Evolution DX2 Satellite Controllers, multiple station radio boards high gain and dome antenna assemblies, 2" flow sensors, circuit board & N.O. master Valves plus evolution shielded sensor cables.

The outcomes will be a completed system with:

- automatic daily re-programming of all field satellites based on site weather conditions
- automatic shut-down of all field satellites due to rainfall or excessive wind
- automatic shut-down of systems with unscheduled, unwanted or excessive flow
- irrigation programming and monitoring of all field satellites from the central computer
- tracking and reporting of water consumption and irrigation component failures
- access to the central computer from anywhere via computer & phone modem

- a. Quantify project outcomes and benefits
- b. Qualitative description if you can't quantify above

The outcome and benefits will be a savings of approximately 40% in water use and approximately 30% to 50% savings in manpower, equipment and maintenance costs. Another significant benefit is the system's ability to monitor and record all facets of the city-wide irrigation network.

The actual data scanned and compiled by the master computer will be processed daily and available 24 hours a day for review and adjustment.

The expected outcome will be reliable data which can be used to determine total and incremental water loss, system reliability, trouble shooting and adaptability to modify the system for specific water demands.

4. Assessment of Costs and benefits

a. List and explain major analysis assumptions and methodologies

- Water Control – Along with the ability to provide efficient watering schedules, central systems will allow the user to shut off all irrigation immediately in case of rain or other emergencies that require disconnecting irrigation.
- Reduced Labor Costs – By manipulating all of the irrigation schedules from a single central location, the user will eliminate the need to make schedule adjustments at each controller. Irrigation schedule changes may take minutes instead of hours and system shutdowns can take seconds.
- Gas Savings – will be realized and vehicle wear and tear may be reduced when the user can make changes from a single location instead of having to drive to or around the project site to make irrigation schedule changes.
- Fertilizer and Chemical – use can be reduced through good irrigation management. Leaching can be reduced which will reduce fertilizer applications. In turn, good plant health will reduce pest infestations and disease.
- Street and Road repairs – Irrigation water will degrade asphalt faster than any other source. With a central control system, the manager can help control runoff and help prolong asphalt life by reducing repairs and repaving.
- Flow Sensing, lighting, fountains, pump control, rain cans and moisture sensors are additional applications that can be utilized on a central control system to help control costs.

b. Express benefits and costs in 2001 dollars

<u>Item</u>	<u>Cost Benefit/Year</u>
Water Control	\$ 32,000
Reduced Labor Costs	2,400
Gas & Vehicle Savings	230
Fertilizer and Chemical	1,000
Street and Road Repairs	1,000
Total	\$ 36,630

c. Convert all costs & benefits to present value equivalents

The costs would increase by approximately 4%/year, thus an annual savings of \$38,095.

d. Table of present value, quantified costs and benefits for applicant and each beneficiary

Item	(Annual) Value	Benefits	Beneficiary
Water	\$80K/117AC.FT.	\$32K@40%	City of Saratoga
Water	\$32K	Water transfer	San Jose Water
Labor Costs	2,400	2,400	City of Saratoga
Gas & Vehicle Savings	230	230	City of Saratoga
Fertilizer and Chemical	1,000	1,000	City of Saratoga
Street and Road Repairs	1,000	1,000	City of Saratoga

e. Demonstrate that it is locally cost effective

With an approximate annual savings of \$36,630 (excludes 4% annual increase), the city will greatly benefit from the proposed new system and the return on the grant investment will be realized monetarily in approximately eleven (11) years. This does not include the water savings of approximately forty-seven (47) acre feet per year which calculates to five-hundred, seventeen (517) acre-feet of water savings over the same period.

E. Outreach, community involvement and acceptance

Public outreach regarding this system occurs at city council meetings and the park commission meetings. The public expects city staff to provide public service at the best cost and best management practices. The proof of public support will be noted in the lack of calls from various citizens regarding water over spray at parks and medians.

Training and employment will impact city staff only. Economic benefits will again be the savings of water and ancillary activities related to the new system. The savings to the city will allow the city council to improve public service in other areas of need such as traffic safety, streets and highways, police, fire and other critical needs.