

**TO:** James L. App, City Manager  
**FROM:** Meg Williamson, Interim Director of Public Works  
**SUBJECT:** Storm Drain Master Plan – Atlas Preparation  
**DATE:** April 6, 2004

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**NEEDS:** For the City Council to authorize preparation of a Storm Drain Atlas Map.

**FACTS:**

1. The City's Storm Drain Master Plan was adopted in 1976. With the recent adoption of the General Plan, the Storm Drain Master Plan needs to be updated.
2. The budget includes \$300,000 to complete the update.
3. The first step in updating the Master Plan is to prepare a Storm Drain Atlas which would locate and inventory all the existing storm drain pipes, drain inlets, and manholes.
4. The City's adopted Storm Water Management Plan also identifies the need to inventory and prepare an atlas of all the existing storm drain facilities in the City.

**ANALYSIS  
AND**

**CONCLUSION:** Preparation of a Storm Drain Atlas map is the first step in updating the City's Storm Drain Master Plan.

In December 2003, staff issued a Request for Proposal to prepare the atlas map. Six responded with fees ranging from \$21,910 to \$120,660. Staff reviewed the proposals and determined that John L. Wallace and Associates is well qualified to prepare the atlas and proposes to do so at a fee of \$21,910.

**POLICY**

**REFERENCE:** General Plan and Adopted Capital Improvement Project Budget

**FISCAL**

**IMPACT:** \$300,000 has been appropriated to update the 1976 Storm Drain Master Plan. Preparation of the atlas map would be paid from the \$300,000 budget.

**OPTIONS:**

- A. For the City Council to authorize the City Manager to award a professional service contract to prepare a storm drain atlas to John L. Wallace and Associates for a not-to-exceed fee of \$21,910.
- B. Amend, modify, or reject the above option.

Attachment:

- 1) Scope of work and fee proposal

Report Prepared By:

Ditas Esperanza, P.E.

Capital Projects Engineer

Proposal  
for the  
City of Paso Robles  
Storm Drain Atlas Mapping

*Submitted By*  
John L. Wallace & Associates  
*Consulting Civil Engineers • Planners • Surveyors*  
4115 Broad Street, Suite B-5  
San Luis Obispo, California 93401  
(805) 544-4011 • fax (805) 544-4294  
[jlwacorp@jlwa.com](mailto:jlwacorp@jlwa.com) • [www.jlwa.com](http://www.jlwa.com)

# Understanding and Approach

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**Understanding the needs of the City.** As with any project or service that JLWA provides its clients, our number one priority is understanding the needs of the City. We will work closely with City staff, and will make ourselves available throughout the project. It is our understanding that the City of El Paso de Robles would greatly benefit from the development of a Storm Drain Atlas Map. With an aging system and continued expansion of facilities, the City will need a tool that maps and coincidentally tracks the changes to the system. To this extent JLWA proposes to provide the City with a storm drain atlas map produced from a Geographic Information System (GIS). This approach allows us to meet the current need for the City, the storm drain atlas map, but will also provide the City with the information and tools necessary for tracking and analyzing the system now and into the future.

Our overall approach to the City's storm drain atlas mapping project is as follows:

**Kickoff Meeting.** A kickoff meeting is a key element to any project, and we will begin the City's storm drain atlas mapping project with a focused kickoff meeting. This will be an important meeting where all the key players are introduced, and have the opportunity to interact and discuss specific issues relative to the development of the storm drain system. At this meeting, we will ensure that the expectations and goals for the project are emphasized, as we review and discuss the project scope, schedule, deliverables, and all other aspects of the storm drain atlas project.

**Project updates and client communication.** We know from our experience that successful projects require close communication with all team members. As part of our approach to the City's storm drain atlas project, we will provide the City with monthly status reports on progress, schedule and budget, and will provide very close and open communication with the City on a day-to-day basis.

**Project Team.** JLWA offers the City one integral project team all under the same roof. Whether we are reviewing storm drain record plans, designing the GIS database or locating drainage structures in the field, our project team members are all in one

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location. This will allow us to execute our work in a focused, coordinated and efficient manner.

**Technical Expertise.** Our project team is comprised of the key personnel to provide you with the technical expertise and experience needed to fulfill your project needs.

**Quality Assurance and Quality Control.** Every project that JLWA embarks upon includes ensuring that products delivered to our clients are of the highest quality. To that end, JLWA has established procedures for peer-reviews, plan checks when applicable, and detailed technical reviews. Our in-house procedures for quality assurance and quality control will ensure we deliver a high quality work product to the City.

**Project Qualifications.** For this project in particular, JLWA proposes to use our "modified approach" to atlas mapping, which allows us to provide the City with a better overall product at an affordable cost. For this project our modified approach includes:

1. The scanning of the storm drain record plans to allow for more efficient data capture, providing the City with a digital archive of the plans and allowing for City personnel to review/print the plan simply by clicking on the storm feature through the supplied, free ESRI-JLWA installed, GIS software. This tool will allow City staff to locate, review and print plans more efficiently.
2. Additionally, our approach on completing the field inventory phase of this project will include taking digital photography of the storm structures located in the Westside of the City. This will allow the City to build a digital archive of the physical condition of the City's storm drain features, track any changes to the storm features and allow City personnel to review/print the photos simply by clicking on the storm feature through the supplied, free ESRI-JLWA installed, GIS software.

JLWA strongly believes that this proposal meets and exceeds the expectations of the City and will provide the City with an invaluable tool.

# Scope of Services

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JLWA has prepared this scope of services based on the outline scope of work provided in the RFP. We have expanded the scope of services to include our understanding of the project elements.

## **SCOPE OF SERVICES**

### **1.0 Project Management and Coordination**

This task includes day-to-day coordination of all project activities, including scheduling and budget controls, staffing needs and coordination, client coordination, and other related project management activities.

### **1.1 Project Kickoff Meeting & Data Inventory**

The purpose of this meeting will be to establish contacts, clarify any ambiguities in the proposed work/schedule, have a pilot project discussion and begin the process of more fully defining the database design for the Storm Drain Atlas project. We will prepare a list of information to be provided by City staff and will distribute this list for discussion at the kickoff meeting. We will coordinate all data collection activities with City staff as needed. A preliminary list of information to be requested includes, but is not limited to, the following:

#### From the City

- 250 storm drain record drawings for the Eastside of the City
- Existing AutoCAD City basemap

#### From the County

- County of San Luis Obispo GIS parcel basemap (free to SLO County Cities and local agencies)
- County of San Luis Obispo 2003 Aerial Photography (available through the City of El Paso de Robles planning department)

### **2.0 Storm Drain System Development**

JLWA will compile the storm drain system by completing the following tasks for this GIS atlas mapping project:

### **2.1 Basemap Development**

JLWA will determine, with guidance from the City, the most appropriate basemap to use for this project. The City has an existing AutoCAD basemap, but from recent discussions with the City it is not clear if the basemap has been kept current. The City also has the option to use the County of San Luis Obispo GIS parcel basemap, maintained by Barclay Mapworks, Inc. This

# Scope of Services

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basemap is initially free to San Luis Obispo County local governments, after appropriate licensing agreements have been signed. The County of San Luis Obispo has also completed a project with AirPhotoUSA that produced color orthophotography for the entire county. JLWA will anticipate working with Barclay Mapworks, Inc. to obtain the most current version of the parcel layer and AirPhoto USA to obtain 2003 aerial photography to be used for this project.

## 2.2 Database Design

The database design process is essential for efficiently completing this Atlas Map project and will require recommendations from the City about the design. The database design will outline the attribute fields and values required for capturing and effectively deploying the storm drain information through the hard copy maps and GIS software. This GIS database will also contain additional fields that will allow the City to connect other information, such as external databases, imagery (manhole and inlet condition photos) and other storm drain related data to the GIS at a later time. The following is a preliminary list of the possible attribute fields that would be incorporated into the GIS database:

*Eastside only. Information collected from record plans, if accessible.*

### **Storm Drain Pipe:**

- Diameter
- Material
- Type (Ditch)
- Upstream Invert
- Downstream Invert
- Slope
- Pipe Length
- Plan Number
- Plan Date
- Street Location

### **Culverts/Ditches:**

- Diameter
- Material
- Pipe Length
- Plan Number
- Plan Date
- Street Location

### **Storm Drain Manhole:**

- Rim Elevation
- Plan Number
- Plan Date
- Street Location

### **Inlets/Outlets:**

- Size
- Type
- Elevation
- Plan Number
- Plan Date
- Street Location

# Scope of Services

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*Westside only. Information collected during field inventory, if accessible.*

**Storm Drain Pipe:**

- Diameter
- Material
- Type (Ditch)
- Street Location

**Storm Drain Manhole:**

- Size
- Street Location
- SDMH Image Link

**Inlets/Outlets:**

- Size
- Type
- Street Location
- Inlets/Outlets Image Link

This is only a preliminary list of the possible attribute fields and it will be expanded or contracted to accommodate the specific needs of the City for this project.

### **2.3 Pilot Project**

JLWA will create two (2) pilot areas, Westside/Eastside, to be used to establish the appropriate steps for the compilation of the storm drain system. The following are the tasks required to complete the pilot project areas:

- Complete the database design for the storm drain system.
- Select pilot areas in the Eastside and Westside of the City.
- Identify and review of all data sources to be utilized for the project (Basemap, aerial photography, record plans, field structures, etc).
- Use of 1976 Storm Drain Report and field inventory sampling of storm drain features in the Westside of the City.
- Creation of the storm drain system for the East and Westside pilot areas of the City.
- Pilot review meeting with the City to review the development of the pilot systems.
- Production of draft atlas maps, showing the final pilot data, that the City will review to better understand how the mapping will be completed.

These checkplots will allow the City to verify that the information is being captured and presented correctly. Also during this review meeting the City will have the opportunity to make suggestions

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on the final atlas map layout and provide JLWA with the preferred/approved layout.

## **2.4 Field Inventory of Westside Storm Drain Features**

JLWA will base the initial creation of the storm drain system, for the Westside of the City, from a Storm Drain Report schematic map developed for the City in 1976. This map contains location of storm drain facilities, diameter and material for pipe segments and direction of surface flow for the streets as they were in 1976. JLWA will also spend five (5) days in the field, with a staff member from the City's engineering department, to verify and/or add to the information from this map. During these five (5) days JLWA will notify the City if any additional field inventory work is required.

While in the field JLWA staff will take digital photography of the storm drain features and link the photos to the corresponding features on the atlas map. This will allow for the photos to be accessible through the free ArcReader GIS software, installed by JLWA, at the City. The City will be able to select a storm pipe/structure in the GIS and review/print the digital photo associated with the storm feature. This photography will be limited to the features identified/verified in the Westside of the City.

## **2.5 Eastside Data Creation & Compilation from Record Drawings**

Based on the methodologies developed during the pilot and discussed at the pilot review meeting, the remaining storm drain system, for the Eastside of the City, will be incorporated into the GIS from the 250 storm drain record plans.

From a proposal review meeting with the City, it was determined that there are approximately 250 storm drain record plans to be used for mapping the system for the Eastside of the City. JLWA anticipates scanning these record plans to be used to capture the storm information for this project. The City will be able to select a storm pipe/structure in the GIS and review/print the record plan associated with the storm feature in the Eastside of the City. The budget for this project is based on using 250 storm record plans, but a final count of the storm drain record plans will need to be

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completed before the scanning process is initiated. If there are more than 250 plans additional funding may be necessary.

There are three (3) major benefits that the City will receive by scanning these record plans:

1. The City will be building a digital archive of their record plans that will preserve the plans in the event of a natural or manmade disaster.
2. These plans will be easily accessible through the free ArcReader GIS software JLWA proposes to install at the City, significantly reducing the time it would take City staff to identify, retrieve and make copies for city customers.
3. Future uses of the scanned record plans and GIS software would allow City staff to have the record plans available to them in the field via a laptop and mobile GIS technology.

At the conclusion of this project, JLWA will work with the City to determine if a field inventory of the Eastside of the City would be necessary.

### **3.0 Production of Storm Drain Atlas Books**

Prior to the production of the Storm Drain Atlas, JLWA will verify with the City the most appropriate grid system to be used to reference the atlas map sheets. It is anticipated that the storm drain atlas will utilize the existing grid system used for the water system atlas. If this grid system is not preferred, then JLWA will work with the City to determine a more appropriate grid system.

With a selected grid layout and completed GIS storm drain system, JLWA will produce one (1) draft set of the storm drain atlas for City staff to review and verify the information. Once the City has reviewed the draft atlas map set, JLWA will make corrections and updates to finalize the information in the GIS. At the conclusion of this draft atlas review process, JLWA will provide the City with three (3) sets of 11" x 17" hard copy map books and a CD with the electronic data.

### **4.0 Onsite GIS Installation and Training**

JLWA will install a free ESRI ArcReader GIS software and load the GIS database on designated City, preferably Windows 2000

*free!*

# Scope of Services

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workstations or server, as part of a one-day ArcReader training session. At least one member of the City's engineering department will need to attend this one-day JLWA ArcReader user training session for instruction on reviewing GIS information, general use of the software interface and production of plots. JLWA's Robert Lepore will provide this training onsite at the City.

## **5.0 Project Review and Future Planning Meeting**

At the completion of the GIS Atlas Mapping project, JLWA will meet with the City to review the overall outcome of the project and to discuss any further data integration, data automation or data maintenance assistance for future GIS/Engineering application development.

## **DELIVERABLES**

The following are the deliverables that JLWA proposes to provide to the City as a result of this proposal:

1. Three (3) sets of 11" x 17" hard copy maps of the storm drain system.
2. Two (2) CDs with the final electronic storm drain system.
3. Two (2) E-size wall maps of the Storm Drain system.
4. Scanned images of the 250 storm drain record plans (Eastside only).
5. Digital photographs of storm drain features (Westside only).
6. Storm Drain GIS database.
7. Free ESRI ArcReader GIS software.
8. One-day of onsite GIS training for City personnel.

## **NOT INCLUDED IN THIS PROPOSAL**

1. Field inventory of storm drain features for the Eastside of the City.
2. Digital photographs of storm drain features for the Eastside of the City.

# Consultant Fees

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## CONSULTANT FEES

We have prepared a detailed estimate of proposed fees to prepare the City's Storm Drain Atlas Mapping project. These fees are based on JLWA's rate schedules.

We have also provided a labor chart, depicting the level of effort for each key member of our team, per the following table below:

### Summary of Labor Hours by Team Member

STAFF PERSON	HOURS
Craig Campbell	8
Joe Morris	8
Robert Lepore	108
Greg Ippolito	160
<b>TOTAL:</b>	<b>284</b>

**Estimated Cost Breakdown of Total Fee  
Engineering Services for Storm Drain Atlas Mapping  
City of El Paso de Robles**

Task No.	Description	Work-hours by Classification					Fees		
		Tech. Dr./ Prin.	Tech. Dr./ Prin.	PM/ GIS Specialist	CAD/ Field Tch.	Total Hrs.	Reimbur- Labor	sables	Total Cost
<b>PROJECT TASKS</b>									
1.0	Project Management/Coordination	2	4	8	0	14	\$1,360	\$100	\$1,460
1.1	Project Kickoff Meeting & Data Inventory	1	1	8	2	12	\$1,035	\$25	\$1,060
<b>SUBTOTAL TASK 1</b>							<b>\$2,520</b>		
2.1	Basemap Development	0	0	16	0	16	\$1,360	\$25	\$1,385
2.2	Database Design	0	0	12	0	12	\$1,020	\$25	\$1,045
2.3	Pilot Project	0	0	8	0	8	\$680	\$25	\$705
2.4	Field Inventory of Westside Storm Drain	0	2	16	64	82	\$5,410	\$200	\$5,610
2.5	Eastside Data Creation & Compilation	2	0	16	92	110	\$7,140	\$700	\$7,840
<b>SUBTOTAL TASK 2</b>							<b>\$16,585</b>		
3.0	Production of Storm Drain Atlas Books	2	0	8	2	12	\$1,060	\$100	\$1,160
<b>SUBTOTAL TASK 3</b>							<b>\$1,160</b>		
4.0	Onsite GIS Installation and Training	0	0	12	0	12	\$1,020	\$25	\$1,045
<b>SUBTOTAL TASK 4</b>							<b>\$1,045</b>		
5.0	Project Review and Future Planning Meeting	1	1	4	0	6	\$575	\$25	\$600
<b>SUBTOTAL TASK 5</b>							<b>\$600</b>		
<b>TOTAL LABOR HOURS</b>		<b>8</b>	<b>8</b>	<b>108</b>	<b>160</b>	<b>284</b>			
<b>TOTAL ESTIMATED FEES</b>							<b>\$21,910</b>		

# Fee Schedule

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## Surveying Services — San Luis Obispo County

<i>Personnel Hourly Compensation:</i>	<i>Prevailing Wage</i>
Director of Surveying .....	\$105.00
Senior Land Surveyor I - II .....	\$ 90.00 - \$ 95.00
Land Surveyor I - II .....	\$ 80.00 - \$ 85.00
Survey Technician I - III .....	\$ 50.00 - \$ 70.00
GIS Specialist .....	\$85.00
Two-Man Survey Crew .....	\$135.00 ..... \$170.00
Two-Man GPS Survey Crew .....	\$165.00 ..... \$200.00
One-Man GPS/Robot Survey Crew .....	\$135.00 ..... \$155.00
Clerical I -III .....	\$ 40.00 - \$ 50.00

### *Invoicing and Interest Charges:*

Invoices are submitted monthly on an accrued cost basis in accordance with this Fee Schedule. A finance charge of 1.5% per month (18% per annum) will be assessed on all balances that are thirty days past due.

### *Fee Revisions:*

JLWA reserves the right to revise our Schedule of Fees on a semi-annual basis, and also to adjust hourly prevailing wage rates (up or down) as the State establishes rate changes.

### *Personnel Classifications:*

JLWA may find it necessary to occasionally add new personnel classifications to our Schedule of Fees.

### *Prevailing Wage:*

If this project is determined to be publicly funded and requiring that prevailing wage rates be paid, we reserve the right to retroactively bill prevailing wage rates and increase our estimate accordingly.

# Project Schedule

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## Completion of the Storm Drain Atlas Mapping Project

Estimated Contract Award/Notice to Proceed: mid February/March 2004

Task	Description	Week
1.0	Project Management/Coordination	1
1.1	Project Kickoff Meeting & Data Inventory	1
2.1	Basemap Development	2
2.2	Database Design	2
2.3	Pilot Project	2,3
2.4	Field Inventory of Westside Storm Drain Features	4,5
2.5	Eastside Data Creation & Compilation from Record Drawings	6,7,8
3.0	Production of Storm Drain Atlas Books	9
4.0	Onsite GIS Installation and Training	10
5.0	Project Review and Future Planning Meeting	10
<b>ESTIMATED TOTAL PROJECT TIME (months)</b>		<b>2.5</b>