

Town of Los Gatos – Stormwater Master Plan




Task 1. Project Management

CONSULTANT shall be responsible for schedule, quality assurance/quality control (QA/QC), technical management, budget adherence, and contractual obligations. CONSULTANT will follow established internal QA/QC procedures. This task involves regular monthly invoicing and progress reports.




As a follow up to the initial scoping meeting held at the Town on 11-5-19, the CONSULTANT will facilitate a kick-off in-person meeting (Meeting #1) with the Town's Point of Contact (POC) to review the project scope, a detailed schedule, and to identify any changes to the key project team members. Prior to the meeting, CONSULTANT will provide the Town a revised draft project schedule and a list of additional data requests if any. Following the kick-off meeting CONSULTANT will update the schedule to reflect comments from the Town. This scope includes up to two additional updates to the schedule during the life of the project.

The CONSULTANT's Project Manager will facilitate informal project progress calls as necessary. At specific project milestones, the CONSULTANT's Project Manager and select Team members will meet with the Town's POC, typically by teleconference or Go To Meeting. Go To Meeting is an online and web conferencing tool that will allow our team to share important visual information with attendees. We have also assumed that up to two meetings (Meetings #1 and #6) may be in person and held at the Town of Los Gatos facilities. These meetings are accounted for in the respective tasks below and are assumed will be up to two hours in length. CONSULTANT will prepare a meeting agenda and summary for each in-person and Go To Meeting for the Town's records.

Deliverables:

-  Draft and Final Project schedule with up to two updates
-  Kickoff meeting Agenda and Summary (Meeting #1)
-  Monthly progress updates via email and invoicing

Assumptions:

-  Meetings related to Tasks 2 through 4 will be included as part of their respective task.
-  In person meetings will be held at Town of Los Gatos facilities
-  The schedule may be revised twice during the life of the Project.

Task 2. Data Collection

This task will include compiling and reviewing existing information, confirming data needs and accuracy requirements, developing a Project Delivery Memo (PDM), and collecting additional data on the Town's storm drain GIS beyond what was collected after the scoping meeting.

Task 2.1 Coordination and Material Review

The CONSULTANT will review existing information with a focus on the Town's current storm drain GIS data and existing Master Plan of Drainage along with data from the Santa Clara County and Santa Clara Valley Water. Following the review, CONSULTANT will conduct a Technical Kick-off Go To Meeting (Meeting #2) with the POC and key team members to discuss the results of the data review, confirm the spatial accuracy and proposed attributes to be collected during field work, and review the approach for modeling the storm drain system.

An important part of this task will be engaging with key team members in order to gather existing information, confirm data expectations for the project, and receive feedback on the overall approach to data collection, analysis and prioritization of potential CIP. NCE requests participation from the Town's maintenance staff, GIS technician, and any other individuals with inherent on-the-ground knowledge of the storm drain system.

During the teleconference, it will be important to establish the parameters of the data collection. The Town and consultant will come to agreement on the priority attributes, spatial accuracy, and locations prone to flooding and/or areas of hydraulic concern that will be the focus of the data collection and hydraulic analysis. The outcome of the meeting will be documented in a Draft Project Delivery Memorandum (PDM).

Deliverables:

- Technical Kickoff Meeting Agenda and Summary (Meeting #2)

Assumptions:

- The Town will provide CONSULTANT with the Town of Los Gatos Master Plan of Drainage Report, the Town's storm drain GIS and associated drainage files, available as-built information to fill in data gaps, and an updated list of drainage issues.
- The Town will support CONSULTANT in obtaining data and drainage information for the Town including data from the annexed areas from Santa Clara County, additional storm drain GIS data, as-builts, maintenance concerns/records, and records of flooding.

Task 2.2 Development of a Project Delivery Memorandum

CONSULTANT will develop a PDM which is anticipated to include the following sections:

Data Accuracy Determination and Evaluation - Definition of storm drain data accuracy requirements, assumed to be sub-foot for horizontal and vertical data, evaluation of existing data to meet accuracy requirements, and an outline of new data to be collected during field assessments (Task 2.3). This will include a determination of whether existing data meets the Town's accuracy requirements and can be integrated into the new **geodatabase (GDB)** and how that data integration will occur. If existing data does not meet accuracy requirements and it is more cost-effective to collect new spatial and attribute data, a determination will be made during this Task. If new data is required, it will be included as part of the priority or additional assets described in Task 2.3 assumptions.

Delineation of High Priority Areas – The PDM will include a delineation of areas on which to focus data collection, analysis, and CIP generation. The priority areas will be based on information obtained from the Town including flood-prone or hot spot areas established with maintenance history and reported complaints and areas with inadequate drainage systems as identified in the 2000 Masterplan of Drainage. For the preparation of the fee proposal, ten (10) to fifteen (15) high priority areas are assumed with approximately 250-350 assets.

Delineation of Additional Data Collection areas – The PDM will include delineation of areas where storm drain data are to be collected outside the priority areas based on the Town's requests and identified data gaps and needs. For the preparation of the fee proposal an additional approximately 300-400 assets are assumed to be included.

Proposed Storm Drain GDB – Presentation of the proposed GDB framework and structure in an excel spreadsheet format. It will be important to define, with the Town's input, the specific information included in the storm drain GDB and how that information is organized, the naming convention of the assets, and how the existing data and naming convention will be organized.

Data Collection – Definition of the various storm drain features that will be encountered, methods for accurate field measurements and data collection and what attributes will be collected at each feature. This will ensure consistent field data collection and provide a resource for Town staff moving forward.

Data Management – Description of the process for managing the GDB including how information will be backed-up, saved, and how data collection will be tracked in real-time.

Modeling – Description of the steps necessary to prepare, test, and run the model simulations of the storm drain and overland flow. This process will be developed in collaboration with Town staff.

QA/QC Procedures – Discussion of the three levels of QA/QC (first, second, and third line QC reviews) plus presentation of a QA/QC project checklist to ensure the accuracy requirements are met for existing data that is retained and new data that is collected as part of Task 2.3.

Mapping & Reporting – Description of maps to be prepared and how they can benefit Town staff and decision makers.

Trash Capture Device Analysis – Outline of methodology to evaluate application of full trash capture devices and catch basin inserts at strategic locations in the Town. The evaluation will consider effectiveness, cost, and maintenance requirements.



CIP Prioritization Approach – Proposed CIP priority rating criteria (High, Medium or Low) to prioritize potential CIPs based on severity of drainage issue including ponding, flooding, potential damage, maintenance, constructability, and cost.

A Draft PDM will be submitted to the Town for review and comment. A conference call/Go-To Meeting (Meeting #3) will be held with the Town to discuss the Draft PDM. CONSULTANT will obtain, review, and integrate the comments, as appropriate, to develop the Final PDM for delivery to the Town.

Deliverables:

-  Draft and Final PDM Memo
-  Draft PDM Conference Call Agenda and Summary (Meeting #3)

Assumptions:

-  The Town will provide CONSULTANT with written comments on the Draft PDM in addition to participating in the conference call/web meeting.
-  Data from the Town of Los Gatos Master Plan of Drainage Report will be integrated into the storm drain GIS for high priority areas (assumed to be 10 to 15), where appropriate and deemed feasible.

Task 2.3 Data Collection

The PDM will serve as the guide for the data collection effort. The CONSULTANT will use a Trimble Geo7X unit or EOS Arrow Gold (or similar GPS receiver and mobile device) to collect the spatial and attribute data for the storm drain features with a goal to achieve vertical and horizontal accuracy sub-foot horizontally and vertically. Pipe depths will be measured to an accuracy of approximately 0.1 feet using a tape measure or other standard methods. Pipe size and material will be recorded where feasible. The specific data collected at each feature (e.g., top of grate, top of curb, manhole rim, or other location) will be determined during the Technical Kick-off Meeting and will be documented in the PDM. These data will be populated into an ESRI ArcGIS GDB and will undergo a QA/QC process to determine the accuracies

obtained for each point. If the spatial data do not meet the project requirements, these data will be flagged for subsequent follow-up survey (up to 10% of the data).

The CONSULTANT field crews will visit each storm drain feature identified in Task 2.2 to collect the spatial and detailed attribute data. The existing storm drain data will be pre-loaded into a reference GDB for comparison during data collection so efforts are not duplicated and so we make full use of the data. A map book will be created that will include a grid that separates the Town into discrete areas. At the end of each day, areas assessed in the field are marked off to avoid duplicate data collection. This approach will help the field technicians track their progress as they move through the Town.

Data collection Technical Memorandum – Upon completion and acceptance of the Final GDB, NCE will develop a data collection technical memorandum which will be included as an appendix to the final deliverable. This technical memorandum will present a summary of the data collection, identified challenges or considerations moving forward, and recommendations for future data collection.

Deliverables:

- 🗺 Draft and Final Data collection technical memorandum

Assumptions:

- 🗺 The horizontal and vertical accuracy will be adequate for the Town's current purposes. The GPS data will not be of survey-grade accuracy.
- 🗺 The number of assets to be collected during the data collection effort will be determined during Task 2.2 and, depending on the Town's needs and available resources, and will not include the Town's entire storm drain system. **For the fee preparation, the number of assets is estimated to be 650. This includes 250-350 assets in the 10-15 priority areas plus an additional 300-400 assets in additional areas to be determined prior to the data collection effort. We have assumed that both data collection efforts (priority and additional areas) will be done during the same approximate three (3) week time period.** Final data collection costs will be based upon the number of assets to be collected and will be agreed upon by the Town and NCE.
- 🗺 Town staff will be available to support CONSULTANT field crews with accessing locked or inaccessible storm drain infrastructure and to provide traffic control, where necessary.
- 🗺 CONSULTANT field crews will not access private property during data collection efforts. However, if it is deemed necessary for CONSULTANT field crews to access private property, the Town will obtain clearance for CONSULTANT's field crews.
- 🗺 The GDB will be delivered to the Town as outlined in the PDM and will not be incorporated into the existing Town's GIS database. Any integration of the newly collected GDB into the Town's GIS database will be done by the Town.

Task 3. Evaluation of Storm Drain System

CONSULTANT will complete hydrologic and hydraulic models at the level of detail necessary to provide an assessment of the overall drainage and the storm drain system in areas of known flooding as identified during Task 2.2. For the fee preparation, approximately 10-15 priority analysis areas are assumed.

Task 3.1 Supplemental Hydrologic and Hydraulic Evaluation

The need for any supplemental hydrologic analysis will be identified during Task 2.2. All hydrologic analysis will follow methods outlined in the Santa Clara County Drainage Manual dated 2007 to calculate peak flows associated with the 10-year and 100-year return intervals. A hydraulic analysis will be performed for prioritized elements of the Town's storm drain GIS and will focus on areas that are identified in Task 2.2 as being flood prone and/or of hydraulic concern. CONSULTANT proposes to use the Environmental Protection Agency (EPA) Storm Water Management Model (SWMM) for any hydraulic modeling of storm drain and XPStorm and/or the U.S. Army Corps of Engineers HEC-RAS 1D/2D for modeling of open channels and areas of overland flooding. Upon completion of the hydrologic and hydraulic analyses, CONSULTANT will facilitate a Go To Meeting with the Town (Meeting #4) to discuss the modeling results and problem areas as well as identify potential solutions and begin preparing a priority rated CIP list. The hydrologic and hydraulic results will be presented in the Draft and Final Stormwater Master Plan Report, along with model input and output data.

Deliverables:

- 📄 Maps and figures showing the results of the hydrologic and hydraulic analyses in pdf format to be submitted to the Town prior to Hydrology/Hydraulics Go To Meeting
- 📄 Hydrology/Hydraulics Go To Meeting Agenda and Summary (Meeting #4)

Assumptions:

- 📄 Data contained in the Town of Los Gatos Master Plan of Drainage Report and additional data obtained or field measured by CONSULTANT will form the basis of the hydrologic and hydraulic evaluations, where applicable.
- 📄 CONSULTANT will coordinate with the Town to identify the level of effort and locations requiring additional hydrologic and hydraulic evaluation. For the fee preparation, ten (10) to fifteen (15) priority areas for analysis are assumed.
- 📄 CONSULTANT will follow methods outlined in the 2007 Santa Clara County Drainage Manual for the supplemental hydrologic and hydraulic evaluation.

Task 3.2 Trash Capture Device Analysis

CONSULTANT will use existing data showing drainage catchments and field data collected as part of this project to evaluate trash capture devices at strategic locations including catch basins inserts and full capture devices. The evaluation will consider constraints such as drainage, flooding, and access for maintenance as well as effectiveness, costs (capital and O&M), and maintenance requirements. CONSULTANT will summarize the results of the evaluation during the Hydrology/Hydraulics Go To Meeting at part of Task 3.1. CONSULTANT will then review and integrate the Town's comments to develop a brief Trash Capture Device Analysis section to be included in the Draft and Final Stormwater Master Plan Report.

Deliverables:

- 📄 Deliverable to be part of Tasks 3.1 and Task 4

Assumptions:



- 📄 The Town will provide CONSULTANT any available GIS data for trash capture device drainage areas, locations of trash capture devices, or related supporting information.
- 📄 CONSULTANT and the Town will identify strategic locations for trash capture device evaluations.
- 📄 The number of locations to be evaluated will be agreed upon by the Town and CONSULTANT, based on the Town's need and available resources.

Task 3.3 Identification of Capital Improvement Projects

Based on the locations of concern identified during Task 2.2 and the results of the supplemental hydrologic and hydraulic analyses, CONSULTANT will coordinate with the Town to identify a list of CIP projects to mitigate flooding and storm water concerns. Cost estimates will be developed for the identified drainage and infrastructure improvements. CONSULTANT will include draft priority classifications for the CIPs based on the developed and approved CIP priority rating criteria (High, Medium or Low) included in the PDM.

A Draft CIP list, prioritized with the CIP rating criteria, will be submitted to the Town for review and comment. A Go To Meeting (Meeting #5) will be held with the Town to discuss the Draft CIP list. CONSULTANT will obtain, review and integrate the comments, as appropriate, to develop the Final CIP list for inclusion in the Draft and Final Stormwater Master Plan Report.

Deliverables:

-  CIP Go To Meeting Agenda and Summary (Meeting #5)
-  Draft prioritized CIP list

Task 4. Stormwater Master Plan Report

The Draft and Final Stormwater Master Plan Reports are critical to presenting the results of the project for key decisions makers. Therefore, the focus will be on developing a concise, readable and user-friendly report with a clear executive summary. To facilitate this outcome the CONSULTANT team will provide the Town an outline of the document for the Town's review and buy in before resources are spent preparing a draft of the Stormwater Master Plan Report (SMPR).

CONSULTANT anticipates that the SMPR will include discussions on the following:

- Scope of Work
- Description of the Town's storm drain GIS
- Description of data collection efforts
- Results of the hydrologic and hydraulic analyses
- Deficiencies identified in the Town's storm drain GIS within priority areas as identified in Task 2.2
- Recommendations of storm drainage improvements within priority areas as identified in Task 2.2
- Recommendations for next steps to take (such as CCTV analysis) to determine storm drain component life cycle costs based on field data in order to establish a fifty-year capital maintenance and replacement program.
- Discussion of the CIP priority rating criteria as outlined in the PDM
- A prioritized list of capital improvement projects, including cost estimates
- Results of the trash capture device analysis
- Recommendations for future data collection efforts
- Recommended changes to the Town's drainage-related ordinances if any
- Operation and maintenance recommendations
- Potential funding mechanisms for proposed improvements

CONSULTANT will coordinate and facilitate an in-person meeting (Meeting #6) with the Town POC and key team members to discuss comments and feedback on the Draft Report. Based on this input the CONSULTANT team will then make the appropriate revisions to the Draft and prepare the Final Report for submittal to the Town.

Deliverables:

- 🗄 Draft Masterplan Meeting Agenda and Summary (Meeting #6)
- 🗄 Draft Stormwater Master Plan Report with Exhibits (PDF's)
- 🗄 Final Stormwater Master Plan Report with Exhibits (PDF's)
- 🗄 Storm drain GIS and any model output of the analyzed portion of the Town's storm drain in Appendix
- 🗄 Backup for Hydrologic and Hydraulic Analysis including digital copies of models in Appendix
- 🗄 Digital CAD files

Assumptions:

- 🗄 The Town will provide a list of current funding sources related to drainage, trash capture, and water quality.
- 🗄 CONSULTANT will provide an ESRI GDB of the storm drain GIS collected as described in Task 2,3 Data Collection.

NCE DRAFT Staffing Plan & Fee Estimate
 Town of Los Gatos
 Stormwater Masterplan Update
 12/4/2019

Task	Principal-QA/QC Jason Drew		Project Manager Andre Jankowski		Associate Mary Horvath Dave Rios		Senior Jeremy Hall Donna Bondine		Project Christine Davis Scott Kobs		Staff Mack Casterman Molly Laitinen		Senior Designer Sean Teeter		Field Technician Zeke Humphrey Mack Casterman		Clerical		Expenses			Totals		
	# Hrs @ \$260	Cost	# Hrs @ \$260	Cost	# Hrs @ \$210	Cost	# Hrs @ \$180	Cost	# Hrs @ \$155	Cost	# Hrs @ \$135	Cost	# Hrs @ \$145	Cost	# Hrs @ \$95	Cost	# Hrs @ \$80	Cost	Vehicle & Mileage	Other Direct	Cost	Labor Hours	Cost	
Task 1 Project Management/Coordination																								
1.1	Kickoff Meeting		\$ -	8	\$ 2,080	6	\$ 1,260	4	\$ 720		\$ -		\$ -		\$ -		\$ -	1	\$ 80	\$ 100	\$ 25	\$ 125	19	\$ 4,265
1.2	Progress updates, schedules and invoicing		\$ -	40	\$ 10,400	1	\$ 210	1	\$ 180		\$ -		\$ -		\$ -		\$ -	8	\$ 640		\$ 25	\$ 25	50	\$ 11,455
Subtotals		0	\$ -	48	\$ 12,480	7	\$ 1,470	5	\$ 900	0	\$ -	0	\$ -	0	\$ -	0	\$ -	9	\$ 720	\$ 100	\$ 50	\$ 150	69	\$ 15,720
Task 2 Data Collection																								
2.1	Coordination and Material Review		\$ -	2	\$ 520	4	\$ 840	5	\$ 900	24	\$ 3,720		\$ -		\$ -		\$ -		\$ -	\$ 500	\$ 25	\$ 525	35	\$ 6,505
2.2	PDM		\$ -	2	\$ 520	6	\$ 1,260	4	\$ 720	10	\$ 1,550	10	\$ 1,350		\$ -		\$ -	5	\$ 400		\$ 25	\$ 25	37	\$ 5,825
2.3 a	Priority Area Data Collection			4	\$ 1,040	20	\$ 4,200	50	\$ 9,000			60	\$ 8,100			150	\$ 14,250			\$ 700	\$ 2,000	\$ 2,700	284	\$ 39,290
2.3 b	Other Area Data Collection			4	\$ 1,040	25	\$ 5,250	62	\$ 11,160			74	\$ 9,990			162	\$ 15,390			\$ 890	\$ 3,000	\$ 3,890	327	\$ 46,720
Subtotals		0	\$ -	12	\$ 3,120	55	\$ 11,550	121	\$ 21,780	34	\$ 5,270	144	\$ 19,440	0	\$ -	312	\$ 29,640	5	\$ 400	\$ 2,090	\$ 5,050	\$ 7,140	683	\$ 98,340
Task 3 Evaluation of Storm Drain System																								
3.1	Supplemental H&H		\$ -	14	\$ 3,640	28	\$ 5,880		\$ -	62	\$ 9,610	0	\$ -				\$ -		\$ -			\$ -	104	\$ 19,130
3.2	Trash Capture Device Analysis			1	\$ 260	4	\$ 840	8	\$ 1,440	4	\$ 620													\$ 3,160
3.3	Identificaiton and analysis of CIP		\$ -	10	\$ 2,600	25	\$ 5,250		\$ -	40	\$ 6,200		\$ -	30	\$ 4,350		\$ -		\$ -		\$ 200	\$ 200	75	\$ 18,600
Subtotals		0	\$ -	25	\$ 6,500	57	\$ 11,970	8	\$ 1,440	106	\$ 16,430	0	\$ -	30	\$ 4,350	0	\$ -	0	\$ -	\$ -	\$ 200	\$ 200	196	\$ 40,890
Task 4 Stormwater Master Plan Report																								
4.1	Draft Report	8	\$ 2,080	15	\$ 3,900	30	\$ 6,300		\$ -	60	\$ 9,300		\$ -	20	\$ 2,900		\$ -		\$ -	\$ 100		\$ 100	113	\$ 24,580
4.2	Final Report	8	\$ 2,080	20	\$ 5,200	30	\$ 6,300		\$ -	35	\$ 5,425		\$ -	10	\$ 1,450							\$ -	93	\$ 20,455
Subtotals		16	\$ 4,160	35	\$ 9,100	60	\$ 12,600	0	\$ -	95	\$ 14,725	0	\$ -	30	\$ 4,350	0	\$ -	0	\$ -	\$ 100	\$ -	\$ 100	206	\$ 45,035
Project Totals		16	4,160	120	31,200	179	37,590	134	24,120	235	36,425	144	19,440	60	8,700	312	\$ 29,640	14	\$ 1,120	2,290	5,300	\$ 7,590	1,154	\$ 199,985