

ON-CALL TASK 1: ON-CALL MISCELLANEOUS SUPPORT

SCOPE OF WORK:

Objective: CH2M HILL will provide on-call miscellaneous support on an as needed basis to assist SEMSWA in their operations.

Task 1: Project Management

Project Management performed by CH2M HILL for this Task Order consists of managing the scope, schedule, budget, and CH2M HILL team, as well as contracting, invoicing, and coordination with SEMSWA.

Progress meetings will be conducted to review progress of this task order. For budgeting purposes, it is assumed that 4 meetings will be conducted.

Task 2: General Miscellaneous Support

General Miscellaneous Support could consist of any type of support as needed by SEMSWA. The following is a list of potential miscellaneous tasks that CH2M HILL could support. When specific activities are identified, CH2M HILL and SEMSWA will agree upon the work activities, and if appropriate, develop a more detailed scope for the tasks along with the associated fee amounts.

- Extension of SEMSWA staff. CH2M HILL understands that there may be tasks that SEMSWA would take on themselves, if there is staff availability. When staff availability is limited, this on-call miscellaneous task would allow CH2M HILL staff to assist SEMSWA staff in any manner needed.
- Building, Furniture, and Storage Device Purchase Coordination Support
- CMMS Data Transfer, Software Purchase, and Implementation Support
- Graphics, Plotting, and Related Support
- Public Relations / Public Involvement Support
- Centennial Airport Support. CH2M HILL's Aviation Group is currently conducting the Stormwater Master Plan for the Airport. CH2M HILL helped coordinate and conduct the kickoff meeting between the Airport and SEMSWA. CH2M HILL can help support SEMSWA as the Airport conducts this project by coordinating meetings, providing project updates, assisting in negotiating any needed fee adjustments, or other related tasks.
- Engineering, Design, and Modeling Services
- Third Party Independent Review Services
- Construction Services (Bidding services, construction administration, construction inspection, cost estimating, and other related services)
- Stormwater Emergency Repair Support (for example, a quick design of a stormwater component that is damaged by a large storm).

Deliverables

The deliverables for this task will be defined with SEMSWA as the needs of this task are better defined.

Fee Estimate

A level of effort was assumed for this task as shown below:

- Provide 10 hours per week of miscellaneous support for the first 4 months.
- Provide 8 hours per week of miscellaneous support for the remaining 8 months.

It is assumed that services begin in September of this year.

Please see the attached fee estimate spreadsheet that details the time allowances to support this task.

Schedule

For the purpose of the fee estimate, a one year period of performance is assumed. On-Call Miscellaneous Support could continue as long as needed by SEMSWA. In addition, additional new tasks could be established with separate scopes and fees as opposed to being included in this miscellaneous on-call task.

CH2M HILL FEE ESTIMATE
TASK 1: ON-CALL MISCELLANEOUS SUPPORT
8/3/2007

Labor Category:	Project Manager	Sr. Proj. Engr.	Office				
2007 Rate, \$/Hr:	\$145.00	\$95.00	\$64.00				
2008 Rate, \$/Hr:	\$153.00	\$100.00	\$67.00				
ACTIVITY/TASK				Total Labor Hours	Labor Cost	Expense	Total
Project Management							
Contracting / Accounting / Invoicing / Project Management (1/3 in 2007, 2/3 in 2008)	15		10	25	\$ 2,915.00		\$ 2,915.00
Progress Meetings (4 assumed)	12	8		20	\$ 2,590.67	\$ 50.00	\$ 2,640.67
General Miscellaneous Support							
First 4 Months of Support (2007)	87	87		174	\$ 20,880.00	\$ 100.00	\$ 20,980.00
Remaining 8 Months of Support (2008)	139	139		278	\$ 35,167.00	\$ 100.00	\$ 35,267.00
Total	253	234	10	497	\$ 61,552.67	\$ 250.00	\$ 61,802.67

ON-CALL TASK 2: ON-CALL GIS SUPPORT

SCOPE OF WORK:

Objective: CH2M HILL will provide GIS on-call services on an as needed basis.

Task 1: Project Management

Project Management consists of managing the scope, schedule, budget, and CH2M HILL team, as well as contracting, invoicing, and coordination with SEMSWA.

Progress meetings will be conducted to review progress of this task order. For budgeting purposes it is assumed 4 meetings will be conducted.

Task 2: GIS Training

GIS Training consists of up to 20 hours of one-on-one training with SEMSWA staff, including the associated preparation time.

Task 3: GIS Support

GIS Support could consist of the following:

- Establish GIS Best Management Practices. This task would establish Best Management Practices to help SEMSWA move from a CAD-based system to a GIS-based system. Luke Heyerdahl/CH2M HILL has been working with Jerry Rearick on this type of transition already.
- GIS Customization and/or programming to help streamline GIS related tasks, such as querying data, creating GIS reports, etc.
- GIS Map and Figure Preparation
- General GIS support, such as phone, email, or onsite GIS technical support with SEMSWA staff.

Deliverables

The deliverables for this task will be defined with SEMSWA as the needs of this task are better defined.

Fee Estimate

A level of effort was assumed for this task as shown below:

- Provide 4 hours per week of GIS support for the first 4 months, and up to 20 hours of GIS training.
- Provide 2 hours per week of GIS support for remaining 8 months.

It is assumed that services begin in September of 2007.

Please see the attached fee estimate spreadsheet.

Schedule

A one year period of performance is assumed for the On-Call GIS Support task.

Potential Future Tasks

Below is a list of potential future tasks:

- Continued On-Call GIS Support beyond one year

CH2M HILL FEE ESTIMATE
TASK 2: GIS ON-CALL SUPPORT
8/3/2007

	Labor Category:	Project Manager	Sr. GIS	Jr. GIS	Office				
	2007 Rate, \$/Hr:	\$145.00	\$142.00	\$97.00	\$64.00				
	2008 Rate, \$/Hr:	\$153.00	\$150.00	\$101.00	\$67.00				
ACTIVITY/TASK						Total Labor Hours	Labor Cost	Expense	Total
Project Management									
Contracting / Accounting / Invoicing / Project Management (1/3 in 2007, 2/3 in 2008)		10			10	20	\$ 2,163.33		\$ 2,163.33
Progress Meetings (4 assumed)		8	12			20	\$ 2,970.67	\$ 50.00	\$ 3,020.67
GIS Training									
Training Preparation			4			4	\$ 568.00		\$ 568.00
Training			16			16	\$ 2,272.00	\$ 30.00	\$ 2,302.00
GIS Technical Support									
First 4 Months of Support (2007)			64	64		128	\$ 15,296.00	\$ 100.00	\$ 15,396.00
Remaining 8 Months of Support (2008)			64	64		128	\$ 16,064.00	\$ 100.00	\$ 16,164.00
	Total	18	160	128	10	316	\$ 39,334.00	\$ 280.00	\$ 39,614.00

ON-CALL TASK 3: STORMWATER PERMIT TRANSFER SUPPORT

SCOPE OF WORK:

Objective: CH2M HILL will provide support related to transferring five stormwater permits from Arapahoe County, City of Centennial, ACWWA, Inverness, and ECCV to SEMSWA.

It is assumed that Ed Krisor (SEMSWA Attorney) will lead the preparation of the Intergovernmental Agreements (IGAs), including primary coordination with the IGA partners. CH2M HILL's role will be to provide technical support as described below.

Project Management

Project Management consists of managing the scope, schedule, budget, and CH2M HILL team, as well as contracting, invoicing, and coordination with SEMSWA.

Progress meetings will be conducted to review progress of this task order. For budgeting purposes it is assumed 4 meetings will be conducted.

Permit Transfer Support

Permit Transfer Support consists of the following by CH2M HILL:

- Coordination with the five current stormwater permit holders and SEMSWA
- Coordination with CDPHE.
- Completion of the appropriate permit transfer forms
- Compose text and review text by others that will be included in the Intergovernmental Agreements (IGAs). The allowance for this effort is shown in the fee estimate.

Assumptions

The following assumptions are made:

- Existing stormwater permits from the five agencies will be provided to CH2M HILL by SEMSWA.
- No industrial stormwater permits need to be transferred
- No construction stormwater permits need to be transferred

Deliverables

The deliverables for this task include:

- Completed Permit Transfer Forms
- Written text (technical support text) to be included in the IGAs prepared by Ed Krisor
- Documentation for SEMSWA regarding each permit, terms and conditions, renewal date, and requirements.

Fee Estimate

It is assumed that these services will occur in 2007.

Please see the attached fee estimate spreadsheet. A contingency of 15% is estimated for this task for potential changes in scope, and potential changes in level of effort needed for the stated scope.

Schedule

A 4 month period of performance is assumed from the time of Notice to Proceed. This schedule assumes that the IGA partners are active and willing participants in the process.

Potential Future Tasks

CH2M HILL can assist with the transfer of industrial and construction permits, if such permits need to be transferred.

CH2M HILL FEE ESTIMATE
TASK 3: STORMWATER PERMIT TRANSFER SUPPORT
8/3/2007

	Labor Category:	Project Manager	Sr. Regulatory Consultant	Jr. Regulatory Consultant	Office				
	2007 Rate, \$/Hr:	\$145.00	\$168.00	\$92.00	\$64.00				
ACTIVITY/TASK						Total Labor Hours	Labor Cost	Expense	Total
Project Management									
Contracting / Accounting / Invoicing / Project Management		10			6	16	\$ 1,834.00		\$ 1,834.00
Progress Meetings (4 assumed at 3 hours each)		12	12			24	\$ 3,756.00		\$ 3,756.00
Permit Transfer Support									
Coordination with Current Permit Holder		4	16	8		28	\$ 4,004.00		\$ 4,004.00
Documentation for Permit Transfer				10		10	\$ 920.00		\$ 920.00
IGA Coordination and Text Preparation			100	100		200	\$ 26,000.00		\$ 26,000.00
Coordination with Colorado Department of Public Health and Environment			10			10	\$ 1,680.00	\$ 50.00	\$ 1,730.00
Complete Permit Transfer Forms			1	10		11	\$ 1,088.00		\$ 1,088.00
Documentation for SEMSWA on Permits			2	4		6	\$ 704.00		\$ 704.00
	Subtotal	26	141	132	6	305	\$ 39,986.00	\$ 50.00	\$ 40,036.00
Contingency									
15% Contingency									\$ 6,005.40
	Total								\$ 46,041.40

ON-CALL TASK 4: WEBSITE UPDATING AND MAINTENANCE

SCOPE OF WORK:

Objective: CH2M HILL will provide website updating and maintenance.

Project Management

Project Management consists of managing the scope, schedule, budget, and CH2M HILL team, as well as contracting, invoicing, and coordination with SEMSWA.

It is assumed that 4 progress meetings at 2 hours each will be conducted for this task.

Website Maintenance

Website Maintenance would include the following:

- General text edits and maintenance of the SEMSWA website.
- Posting of Board Materials
- Posting of other information, such as project information, rules and regulations, and downloadable files
- Renewing of the web site domain name registrations (semswa.org, semswa.com, and semswa.net)

A level of effort was assumed for this task as shown below:

- Provide up to 10 hours per month of general text edits and maintenance of the SEMSWA website by a CH2M HILL web developer.
- Review of the changes will be performed by CH2M HILL's public involvement specialist to ensure the Public Relations aspect of the changes are consistent with previous SEMSWA messages.

Website Major Revisions

Website Major Revisions would include the addition or replacement of a page on the SEMSWA website. A level of effort was assumed for this task as shown below:

- Up to three major revisions are assumed, with each requiring 10 hours to complete by a CH2M HILL web developer. This estimate assumes that all of the information is readily available, and that one draft of the page will be provided to SEMSWA for review.

Deliverables

The deliverables for this task will be the actual updates to the web site.

Fee Estimate

It is assumed that services begin in September of 2007.

Please see the attached fee estimate spreadsheet for the allowances provided for this task.

Schedule

A one year period of performance is assumed.

Potential Future Tasks

Below is a list of potential future tasks:

- Continued Website Maintenance beyond one year.

CH2M HILL FEE ESTIMATE
TASK 4: WEB SITE UPDATING AND MAINTENANCE
8/3/2007

Labor Category:	Project Manager	Public Relations Consultant	Web Dev.	Office				
2007 Rate, \$/Hr:	\$145.00	\$142.00	\$98.00	\$64.00				
2008 Rate, \$/Hr:	\$153.00	\$149.00	\$103.00	\$67.00				
ACTIVITY/TASK					Total Labor Hours	Labor Cost	Expense	Total
Project Management								
2008)	12			8	20	\$ 2,332.00		\$ 2,332.00
Progress Meetings (4 assumed)	8	8			16	\$ 2,376.00	\$ 60.00	\$ 2,436.00
Website Maintenance								
First 4 Months of Website Maintenance (2007)	2	4	30	4	40	\$ 4,054.00	\$ 100.00	\$ 4,154.00
Remaining 8 Months of Website Maintenance (2008)	4	8	60	8	80	\$ 8,520.00	\$ 100.00	\$ 8,620.00
Website Major Revision								
First Major Revision (2007)	2	4	10		16	\$ 1,838.00	\$ 100.00	\$ 1,938.00
Two Additional Major Revisions (2008)	4	8	20		32	\$ 3,864.00	\$ 100.00	\$ 3,964.00
Total	32	32	120	20	204	\$ 22,984.00	\$ 460.00	\$ 23,444.00

ON-CALL TASK 5: GIS MAP PRODUCTION EASY-BUTTON

SCOPE OF WORK:

Several SEMSWA staff have requested that they be able to print GIS maps themselves. The intent of the GIS Map Creation Easy-Button is to allow SEMSWA staff (including staff with little GIS knowledge) to create GIS maps on SEMSWA's GIS walkup computer. By using ESRI's ArcView program, CH2M HILL will write customized GIS programming code (the Easy-button) to allow SEMSWA staff to configure map contents, select preformatted templates for display, save the map configuration for later use, load a previous map configuration, and export to either JPG format for use in common programs, or to Adobe Acrobat's PDF format for printing to hardcopy. After using the Easy-button to configure a map, ArcView will remain open to allow additional modifications as required. All of ArcView's other features will remain available.

Project Management

Project Management consists of managing the scope, schedule, budget, and CH2M HILL team, as well as contracting, invoicing, and coordination with SEMSWA.

Easy Button Creation

CH2M HILL will develop customized GIS programming code (the Easy-button) as described below.

Map Template Features / Selection Options

The Easy-button will allow the control of the following items:

- ArcView Data Frames (you can change where the legend is, have map insets, etc.)
- Page Size
- Page Orientation (Portrait, Landscape)
- Title Block
- Notes Section
- Map Footer
- North Arrow Style

Map Configuration

- Save current map for later use
- Load previously saved map configurations
- Delete previously saved map configurations
- Change map contents (layers)
- Change title text
- Change pan and zoom levels
- Change map scale

Map Output Formats

- JPG
- PDF
- The other save options within ArcView will still be available

Training

Once the Easy Button is complete, CH2M HILL will provide training for use of the tool. An allowance of 4 hours for preparation and training is assumed.

Deliverable

The deliverable for this task will include the following:

- The Easy Button programming will be loaded onto SEMSWA's walk-up GIS computer
- A brief one to two page instruction sheet
- One training session

Schedule

It is anticipated that this task will occur in 2007 and take 2 months from Notice to Proceed.

Fee Estimate

Please see the attached fee estimate.

CH2M HILL FEE ESTIMATE
TASK 5: GIS MAP PRODUCTION EASY BUTTON
8/3/2007

	Labor Category:	Project Manager	Sr. GIS	Office				
	2007 Rate, \$/Hr:	\$145.00	\$142.00	\$64.00				
ACTIVITY/TASK					Total Labor Hours	Labor Cost	Expense	Total
Project Management								
Contracting / Accounting / Invoicing / Project Management		6		4	10	\$ 1,126.00		\$ 1,126.00
Easy Button Creation and Training								
GIS Programming		1	24		25	\$ 3,553.00		\$ 3,553.00
Training			3		3	\$ 426.00	\$ 15.00	\$ 441.00
Deliverables								
Instruction Sheet		1	1		2	\$ 287.00		\$ 287.00
Loading of Program on SEMSWA Walk-up			4		4	\$ 568.00	\$ 15.00	\$ 583.00
	Total	8	32	4	44	\$ 5,960.00	\$ 30.00	\$ 5,990.00

ON-CALL TASK 6: SEMSWA DRAINAGE INVENTORY - PHASE 1

SCOPE OF WORK:

Phase 1 of this project will create a GIS based drainage inventory for the SEMSWA service area using the best readily available information. The data used to create this drainage inventory will include: past field survey efforts, drainage system maps, as-built drawings, and data from IGA partners. No additional field collection will be conducted in Phase I. Given the complexity and potential unknowns of this project, it has been broken out into a series of subtasks to define the approach and assumptions used to develop the scope of work and fee estimate.

Task 1: Project Management

Project Management consists of managing the scope, schedule, budget, and CH2M HILL team, as well as contracting, invoicing, and coordination with SEMSWA.

Monthly progress meetings will be conducted to help establish progress, obtain feedback from SEMSWA, and effectively discuss any issues that may impact the project. It is assumed that 6 meetings at 4 hours each will be held. The estimate of 4 hours includes the meeting time and preparation time by CH2M HILL.

Task 2: Initial Data Collection and Incorporation

An initial data collection and incorporation effort will be required to develop an understanding of the level of detail, quality, and sources of the best available data for each section of the SEMSWA service area. It is assumed that a data collection Cutoff Date will be applied, once the timing of the Notice to Proceed on this task is known. This will allow a break between the data that is collected in Phase 1, versus the new data that will need to be collected in Phase 2. It is known that collecting data and updating the GIS system will be an ongoing effort.

The initial data collection task will include the following subtasks:

Subtask 2.1: Drainage System Maps Geo-referencing

The drainage system maps will be geo-referenced in order to accurately display them in the GIS database as a background layer. Based upon information from SEMSWA, it is understood that these maps are the most comprehensive representation of the entire drainage system, despite being last updated in 1994. It is CH2M HILL's understanding that the drainage system maps west of I-25 are already geo-referenced, and CH2M HILL does not need to geo-reference them. It is CH2M HILL's understanding that the drainage system maps east of I-25 are not already geo-referenced, and CH2M HILL will geo-reference them.

Subtask 2.2: Field Data from Arapahoe County

Field data previously collected by Arapahoe County will be incorporated into the GIS system. It is understood that this data exists in both raw GPS data and a post-processed CAD representation. CH2M HILL will evaluate both sets of data to establish which will best meet SEMSWA's short and long term needs. As part of the evaluation, CH2M HILL will compare the attributes collected in the field to those retained by the GPS to CAD conversions in order to identify information that may have been lost in the post-processing. It is assumed that the files required for post processing the raw GPS data will be provided by SEMSWA.

Subtask 2.3: Previously Collected As-Built Drawings

As-built drawings that were previously collected by Arapahoe County will be inventoried, scanned, and returned to SEMSWA. It is assumed that CH2M HILL can take the as-built drawings from SEMSWA in order to scan them. It is assumed that 250 as-built drawing sheets will be collected, scanned, inventoried, and returned to SEMSWA in this subtask. This subtask includes time to review the as-built drawing sets so that only the sheets with pertinent drainage information are included in the assumed 250 sheets.

Subtask 2.4: IGA Partner Data

It is assumed that data from the IGA partners (ACWWA, Inverness, and ECCV) will be provided to CH2M HILL by SEMSWA. The data is assumed to be CAD or GIS representations of the drainage system previously owned and maintained by them. The data will be incorporated as-is, and merged into the GIS database. It is assumed that the conversion to GIS will take 30 hours per IGA partner's data set. The assumed hours are an allowance and are based on similar past efforts on other projects, realizing that some imports are relatively easy, and others may require the system to be re-digitized or attribute information to be manually reentered.

Subtask 2.5: Data Collection Summary and Database Development Path Forward

Once the initial data collection and incorporation has been completed, a summary of the data will be documented in a Technical Memorandum (TM). This TM will summarize the data, source, coordinate system, quality, and level of detail. This TM will also document the framework of the GIS database in terms of file structure, component summary, attribute information collected in Phase 1, and the path forward for the database to accommodate Phase 2.

Task 2 Deliverables

- TM "Data Collection Summary and Database Development Path Forward"

Task 3: Missing Data Research and Incorporation

In order to develop an understanding of the drainage system East of I-25, which has primarily been developed after the last update to the drainage system maps, as-built drawings will be located and incorporated into the GIS database. It should be understood that these as-built drawings are often approximate representations of what was constructed, but valuable in developing an understanding of the system and its connectivity. The as-built drawing research and incorporation task will include the following subtasks:

Subtask 3.1: As-Built Drawing Collection

The as-built drawings previously collected from Arapahoe County by SEMSWA represent a portion of the development that has occurred from 1994 to 2004; however, additional as-built drawings will be required. This subtask will include creating an inventory of as-built drawings previously collected compared to the development that has occurred within the SEMSWA service area since 1994. Once a list of needed as-built drawings has been created, these drawings will be collected from Arapahoe County. It is assumed that an additional 250 as-built plan view drawings sheets will be obtained. No as-built profile sheets will be obtained, scanned, or used in Phase 1. This subtask includes time to review the as-built drawings so that only the sheets with pertinent drainage information are included in the assumed 250 sheets.

Subtask 3.2: As-Built Drawing Conversion to Electronic Files

The as-built drawings collected in Subtask 3.1 will be scanned to create an electronic version of this information. It is assumed that CH2M HILL will use a third party scanning company for the scanning portion of this task.

Subtask 3.3: As-Built Drawing Geo-Referencing

The as-built drawings scanned in Subtask 3.2 will be geo-referenced and imported into the GIS database as a background layer. This will allow the as-built drawings to be referenced when creating the drainage system network, and will be able to be referred to in the future for additional information.

Subtask 3.4: As-Built Drawing Data Gap Analysis

After the as-built drawings are brought into the GIS database, a review of aerial imagery will be used to identify where development has occurred, but where no data has been obtainable. A map indicating the data gap areas will be created.

Task 3 Deliverables

- Map indicating data gap areas

Task 4: GIS Base Map and Database Development

For this task, CH2M HILL will develop the GIS nodes, lines, and attributes for the GIS database based on a compilation of best available data collected in the tasks above. This data will be coded to indicate the source of the data to allow for easy distinction between as-built, drainage system map, and field data. The GIS database development will include the following subtasks.

Subtask 4.1: Background Layer Information

A meeting with SEMSWA staff will be held to review the background layers that would be useful to include in the GIS database. The anticipated layers include aerial imagery, roads, parcels, city/county boundaries, and the SEMSWA boundary. These layers are assumed to be existing and readily available or downloadable.

It is assumed that open channels (drainageways) will be included in the database by importing existing data or downloading USGS or other stream centerline data. Digitizing of stream centerlines is not included in this scope or fee.

Subtask 4.2: Existing Field Data Completion

The field data collected by SEMSWA staff west of I-25 is understood to be a multitude of nodes which represent manholes, inlets, outlets, etc. In order to connect these nodes, the drainage system maps will be used to evaluate the location of the node in relation to the infrastructure noted on the map. A pipe alignment will be assumed to connect these nodes based on the drainage system maps and any available attributes collected with the field data. Each pipe will be attributed with pipe size, material, and its approximate date of installation if readily available from the drainage system maps.

It is assumed, based on conversations with SEMSWA staff, that the drainage system west of I-25 will require no as-built drawing information given that the majority of the system has been collected via Arapahoe County field efforts. It is anticipated that after completing Subtask 4.2, a version of the GIS database can be delivered to SEMSWA that would have the

drainage system west of I-25 completed, while work continues on the GIS database for areas east of I-25.

Subtask 4.3: As-Built Drawing Digitizing

The as-built information previously scanned and loaded into the GIS database will be referenced in the GIS database and digitized. This will create a node and line network that will represent the drainage system for Phase 1 of this project. Each GIS element will be attributed with type (manhole, inlet, ponds, etc.), size, approximate date of installation, and any key elevations that are readily available from the plan view of the as-built drawing. It is assumed that only the attributes mentioned above will be incorporated into the GIS database for Phase 1 of this project, in order to assemble a drainage inventory in the shortest amount of time as possible.

The effort for this task is very difficult to estimate because the level of effort required is a function of the number of as-built sheets, the size and clarity of the sheets, the number of stormwater components on each sheet, and the number of attributes available for each component on the sheet. An allowance of 750 hours is shown on the fee estimate for this task.

Task 5: Asset Inventory and Valuation

For this task, CH2M HILL will develop an inventory of the stormwater components and estimate their asset value. It is assumed that open channels (drainageways) do not have an asset value. Phase 1 will include discussions with SEMSWA as how the value of drainageways should be estimated, if needed. The actual effort to establish asset values for drainageways is not included in this scope or fee. The asset inventory and valuation will include the following subtasks.

Subtask 5.1: Asset Quantity Estimation for Data Gap Areas

The quantity and type of stormwater components in the data gap areas will be estimated by reviewing developments of similar size and extrapolating the amount of infrastructure for the data gap area. This estimation will be useful for developing a total number of assets within the system, but will not indicate the location of this infrastructure.

Subtask 5.2: Asset Inventory

A table of assets by type will be developed to determine the quantity of assets within the SEMSWA service area.

Subtask 5.3: Estimate of Unit Costs

In order to develop the total value of the existing system, a 2007 unit cost for each drainage component type will be developed. These unit costs will be developed utilizing the revised UDFCD Bid Tabs program which was recently developed by CH2M HILL.

Subtask 5.4: Cost Conversion

Engineering News Record (ENR) cost escalation factors will be used to convert the 2007 unit cost data to an estimated cost of the infrastructure at the time of installation. This will produce an estimated value of the component at the time of installation, neglecting depreciation.

Subtask 5.5: Asset Depreciation

A meeting with the Financial Director of SEMSWA will be held to develop a depreciation approach. It is assumed that this step will be a joint effort between Dave Agee (Interim SEMSWA Finance Director) and CH2M HILL, and the fee estimate reflects the anticipated level of effort needed from CH2M HILL.

Task 5 Deliverables

- TM “Asset Inventory and Valuation”

Task 6: Phase 1 Final Deliverables

For this task, CH2M HILL will provide the final documentation and GIS deliverable to SEMSWA. The Phase 1 Final Deliverables task will include the following subtasks:

Subtask 6.1: Final Report

For this subtask, CH2M HILL will produce a Final Report which will cumulate the previous TM’s into a single document which outlines the process taken to develop this drainage system inventory. This Final Report will also indicate the next steps envisioned for Phase 2 of this project.

Subtask 6.2: GIS Deliverable

For this subtask, CH2M HILL will provide SEMSWA with the GIS database and a presentation of the information contained within it. The GIS database will be loaded onto the SEMSWA server and tested to confirm that SEMSWA staff can access and utilize the database. This process is assumed to occur twice, once for the data west of I-25, and once for the data east of I-25.

Task 6 Deliverables

- Final Report
- GIS Deliverable

Electronic File Transfer and Control

There will be a point in this project when the electronic data maintained by SEMSWA will need to be transferred to CH2M HILL. At that time, SEMSWA should not make any changes to the electronic information, to avoid concurrent changes by SEMSWA and CH2M HILL. Once CH2M HILL has completed work on the area west of I-25, the information will be sent to SEMSWA and SEMSWA will at that time be able to make changes as needed. Similarly, SEMSWA will be able to make changes to the data east of I-25 when that work has been completed by CH2M HILL.

Fee Estimate

Both SEMSWA and CH2M HILL agree that this task is difficult to estimate, because both organizations do not yet understand the available data, the magnitude of the missing data, how much of the missing data is obtainable, nor how much information is included in the sources that are obtainable. For these reasons, a 30% contingency has been applied to the fee estimate, which is based on the best available data at this time. CH2M HILL will notify SEMSWA as soon as changes to the scope or fee assumptions are uncovered.

Please see the attached fee estimate spreadsheet.

Schedule

Phase 1 of the drainage inventory project is anticipated to be completed within 6 months from the Notice to Proceed. The GIS mapping west of I-25 shall be provided as soon as possible. The GIS mapping east of I-25 will be provided at the completion of Phase 1.

Potential Future Tasks for Phase 2

- Field Data Collection for areas East of I-25
- Digitizing of stream centerlines, if Phase 1 determines this necessary
- Asset valuation for drainageways
- Further investigate data found to be missing in Phase 1
- Update the GIS component and attribute data based on information that did not meet the Phase 1 Cutoff Date. It is known that collecting data and updating the GIS system will be an ongoing effort.
- Create a Process and Specifications for outside agencies to use when providing GIS data to SEMSWA
- Assist with the purchase of SEMSWA-owned survey and GPS equipment
- Develop standards for survey and GPS collection by SEMSWA
- Add query, reporting, and other features to the GIS database to make common tasks more streamlined and efficient

CH2M HILL FEE ESTIMATE
TASK 6: DRAINAGE INVENTORY - PHASE 1
8/3/2007

Labor Category:	Project Manager	Sr. Proj. Engr.	Sr. GIS	Jr. GIS	Jr. Proj. Engr.	GIS Specialist	Office				
2007 Rate, \$/Hr:	\$145.00	\$95.00	\$142.00	\$82.00	\$75.00	\$101.00	\$64.00				
2008 Rate, \$/Hr:	\$153.00	\$100.00	\$149.00	\$86.00	\$79.00	\$106.00	\$67.00				
ACTIVITY/TASK								Total Labor Hours	Labor Cost	Expense	Total
Task 1: Project Management											
1.1: Contracting / Accounting / Invoicing / Coordination / Project Management	24	8	8				20	60	\$ 6,656.00		\$ 6,656.00
1.2: Progress Meetings	24	12	24					60	\$ 8,028.00		\$ 8,028.00
Task 2: Initial Data Collection and Incorporation											
2.1: Drainage System Maps Geo-Referencing	1	1	3	24				29	\$ 2,634.00		\$ 2,634.00
2.2: Field Data from Arapahoe County	1	4	20	40				65	\$ 6,645.00		\$ 6,645.00
2.3: Previously Collected As-Built Drawings	1	8			40		12	61	\$ 4,673.00	\$ 1,000.00	\$ 5,673.00
2.4: IGA Partner Data	2	12	10			90		114	\$ 11,940.00		\$ 11,940.00
2.5: Data Collection Summary and Database Development Path Forward	4	4	14	4		4		30	\$ 3,680.00		\$ 3,680.00
Deliverable: TM	2	2	8	12				24	\$ 2,600.00		\$ 2,600.00
Task 3: Missing Data Research and Incorporation											
3.1: As-Built Drawing Collection	1	12			50		12	75	\$ 5,803.00		\$ 5,803.00
3.2: As-Built Drawing Conversion to Electronic Files		2	4				10	16	\$ 1,398.00	\$ 1,000.00	\$ 2,398.00
3.3: As-Built Drawing Geo-Referencing	1	12	16	160				189	\$ 16,677.00		\$ 16,677.00
3.4: As-Built Drawing Data Gap Analysis	1	2	4	20				27	\$ 2,543.00		\$ 2,543.00
Deliverable: Data Gap Map	1	1	2	8			2	14	\$ 1,308.00		\$ 1,308.00
Task 4: GIS Base Map and Database Development											
4.1: Background Layer Information	3		16	2				21	\$ 2,871.00		\$ 2,871.00
4.2: Existing Field Data Completion		20	24	240				284	\$ 24,988.00		\$ 24,988.00
4.3: As-Built Drawing Digitizing	8	60	75	750				893	\$ 79,010.00		\$ 79,010.00
Task 5: Asset Inventory and Valuation											
5.1: Asset Quantity Estimation for Data Gap Areas	8		8	20				36	\$ 3,936.00		\$ 3,936.00
5.2: Asset Inventory	2	2	4	12				20	\$ 2,032.00		\$ 2,032.00
5.3: Estimate of Average Unit Costs	2	8			24			34	\$ 2,850.00		\$ 2,850.00
5.4: Cost Conversion	2	4			16			22	\$ 1,870.00		\$ 1,870.00
5.5: Asset Depreciation	8	16			16			40	\$ 3,880.00		\$ 3,880.00
Deliverable: TM	4	12			12		4	32	\$ 2,876.00		\$ 2,876.00
Task 6: Phase 1 Final Deliverables											
6.1: Final Report	4	8	4	12				28	\$ 2,892.00		\$ 2,892.00
6.2: GIS Deliverable	8		8					16	\$ 2,296.00		\$ 2,296.00
Work conducted in 2008**											
Additional Cost of Work in 2008*									\$ 3,367.42		\$ 3,367.42
Subtotal	112	210	252	1304	158	94	60	2190	\$ 207,453.42	\$ 2,000.00	\$209,453.42
Contingency**											
30% Contingency**											\$ 46,384.80
Total											\$255,838.22

* Given the project schedule of 6 months, it is assumed that 33% of the work will be conducted in 2008. A 5% rate increase was used to determine the additional cost of work in 2008.

** The contingency was applied to tasks that were determined difficult to estimate. These tasks are the following: 2.2, 2.3, 2.4, 3.1, 3.3, 4.2, 4.3, and 5.5.

ON-CALL TASK 7: CHERRY CREST WEST PHASE 3 - ALTERNATIVES ANALYSIS

SCOPE OF WORK:

The purpose of this Task Order is for CH2M HILL to perform services related to developing a list of alternatives that would reduce flooding potential during storm events larger than the 5-year event near the intersection of University Boulevard and South Elizabeth Way in Centennial, Colorado. This area has been highly publicized and a video of flooding in this area is located on the SEMSWA website, as it was a case in point for the formation of SEMSWA.

The previous Phases of this project are summarized as follows:

- Phase 1: Cherry Crest West Outfall Design
- Phase 2: Cherry Crest West Sump Inlet Improvements on University Boulevard Near South Elizabeth Way
- Phase 3: This is the phase discussed herein.

This project has been broken down into the tasks listed below.

Task 1: Project Management

Project Management consists of managing the scope, schedule, budget, and CH2M HILL team, as well as contracting, invoicing, and coordination with SEMSWA.

A kickoff meeting and two progress meetings (each assumed to be 2 hours in duration) are assumed.

Task 2: Data Gathering

A thorough review of the existing reports and calculations for the intersection of University Boulevard and South Elizabeth Way will be conducted to fully understanding the drainage system that was designed to convey only the more frequent storm events. The survey that was collected in Phase 2 will be utilized for this task. No additional survey is anticipated for this project. It is assumed that all reports and calculations that are not CH2M HILL documents will be provided by SEMSWA to CH2M HILL.

Task 3: Development of Alternatives

In this task, three alternatives will be developed that will consider all of potential means for reducing the low frequency flooding in this area. The three alternatives are envisioned to include the following:

- Creation of a stormwater conveyance system in the back yards of the residents.
- A more efficient connection of the existing system flowing south along University Boulevard to the system along South Elizabeth Way.
- Replacement or additional infrastructure to increase the capacity of the drainage system along South Elizabeth Way.

The following subtasks are envisioned to develop these alternatives:

Subtask 3.1: Design Flow Rate

It is assumed that the design flow rate for this Phase will be provided by SEMSWA staff.

Subtask 3.2: Hydraulic Calculations

Using the design storm flow rate, hydraulic calculations will be used to size the pipes, swales, or other major components for each of the alternatives. As directed by SEMSWA, these calculations will be simple calculations (for example, use FlowMaster, not HEC-RAS). Detailed calculations will be conducted as needed in the future design phase of this project.

Subtask 3.3: Illustrations of Alternatives

Illustrations of the alternatives and the proposed infrastructure will be created. These are assumed to be simple CAD or GIS illustrations. Concept level design drawings are not included in this scope. Three plan view illustrations are assumed in the fee estimate.

Subtask 3.4: Cost Estimate of Alternatives

A budgetary cost estimate will be developed for each of the alternatives. This estimate will be based off the UDFCD Bid Tab program, which was recently revised by CH2M HILL.

Subtask 3.5: Alternatives Review Meeting

A meeting to review the information developed for the alternatives will be held with SEMSWA in order to obtain any comments before presentation to the Board and residents.

Subtask 3.6: Incorporation of Comments

The alternative renderings and cost estimates will be updated based on comments received from SEMSWA.

Task 3 Deliverables

- Illustrations of Alternatives
- Cost Estimate of Alternatives

Task 4: Presentation of Alternatives

Presentations to the SEMSWA Board and residents will be conducted by SEMSWA and CH2M HILL. The following subtasks are envisioned for these presentations:

Subtask 4.1: Presentation to SEMSWA Board

A presentation with SEMSWA staff to the SEMSWA Board will be conducted during a regular SEMSWA Board Meeting. This presentation will quickly highlight the alternatives that will be presented to the residents. It is assumed that any comments received by the SEMSWA Board will be minor and no revisions to the alternative renderings or cost estimates will be required. It is assumed that the SEMSWA Board will provide direction on which alternative is preferred and if any would not be feasible due to cost.

Subtask 4.2: Presentation to Residents

A presentation with SEMSWA staff to the residents will be conducted to obtain their feedback on the alternatives and help establish the preferred alternative. It is assumed that SEMSWA staff will contact the residents and arrange the meeting. Meeting minutes will be provided by CH2M HILL to provide documentation of the decisions and concerns raised at this meeting.

Task 5: Project Documentation

A Technical Memorandum (TM) for the alternative analysis phase will be developed and will include the following:

- Summary text
- Pertinent calculations
- Renderings of alternatives
- Budgetary cost estimates
- Meeting minutes from the resident meeting

Task 5 Deliverables

- Technical Memorandum

Fee Estimate

Please see the attached fee estimate spreadsheet.

Schedule

This On-Call Task is anticipated to be completed 4 months from the Notice to Proceed, and is assumed to occur in 2007. A detailed schedule will be developed for discussion at the kickoff meeting.

Potential Future Tasks

- Design of selected alternative

CH2M HILL FEE ESTIMATE

TASK 7: CHERRY CREST WEST PHASE 3 - ALTERNATIVES ANALYSIS

8/3/2007

	Labor Category:	Project Manager	Sr. Proj. Engr.	Jr. Proj. Engr.	Office				
	2007 Rate, \$/Hr:	\$145.00	\$95.00	\$75.00	\$64.00				
ACTIVITY/TASK						Total Labor Hours	Labor Cost	Expense	Total
Task 1: Project Management									
1.1: Contracting / Accounting / Invoicing / Coordination / Project Management		10			10	20	\$ 2,090.00		\$ 2,090.00
1.2: Kickoff and Progress Meetings		9	12			21	\$ 2,445.00	\$ 60.00	\$ 2,505.00
Task 2: Data Gathering									
2.1: Data Gathering and Review		1	8	4		13	\$ 1,205.00		\$ 1,205.00
Task 3: Development of Alternatives									
3.1: Obtain Design Flow Rate			1			1	\$ 95.00		\$ 95.00
3.2: Hydraulic Calculations		4	16	32		52	\$ 4,500.00		\$ 4,500.00
3.3: Illustrations of Alternatives		1	4	16		21	\$ 1,725.00		\$ 1,725.00
3.4: Cost Estimate of Alternatives		1	4	16		21	\$ 1,725.00		\$ 1,725.00
3.5: Alternatives Review Meeting		4	4			8	\$ 960.00	\$ 20.00	\$ 980.00
3.6: Incorporation of Comments		1	4	10		15	\$ 1,275.00		\$ 1,275.00
Task 4: Presentation of Alternatives									
4.1: Presentation to SEMSWA Board, and Preparation		8	8			16	\$ 1,920.00	\$ 20.00	\$ 1,940.00
4.2: Presentation to Residents, and Preparation		6	8			14	\$ 1,630.00	\$ 20.00	\$ 1,650.00
Task 5: Project Documentation									
5.1: Tech Memo		4	8	12	4	28	\$ 2,496.00		\$ 2,496.00
	Total	49	77	90	14	230	\$ 22,066.00	\$ 120.00	\$ 22,186.00

ON-CALL TASK 8: CIP PROJECT COST UPDATES AND PRIORITIZATION

SCOPE OF WORK:

CH2M HILL will provide support related to updating SEMSWA's list of needed CIP projects, adjust CIP project costs to 2007 dollars, and create a Decision Model to prioritize the projects.

Task 1: Project Management

Project Management consists of managing the scope, schedule, budget, and CH2M HILL team, as well as contracting, invoicing, and coordination with SEMSWA.

It is assumed that two progress meetings will be held for this task, in addition to the workshops discussed below.

Task 2: Data Collection

This task will consist of data collection from SEMSWA to obtain CIP the project list, background information, and any associated files.

Per discussions with SEMSWA, it is assumed that the CIP list to be used in this task is already inventoried and in MS Excel. It is assumed, per discussion with SEMSWA, that there are 100 projects on the list.

For each CIP project (100 projects), CH2M HILL will collect the associated Master Plan, make one copy, and return the originals to SEMSWA. It is assumed that the 100 projects are consolidated in approximately 10 master plans.

Task 3: Review of Master Plan Information

In order to accurately score each project as discussed below, the Master Plans will be reviewed in enough detail to adequately score the project against the Decision Model Criteria. It is assumed that this task will take 1 hour per project.

Task 4: Project Cost Escalation

It is assumed that each CIP project has an associated cost with it, and the date on which that cost estimate was established is known. It is assumed that the date information is included in the Excel spreadsheet for each corresponding CIP project.

The Total Project Cost for each project will be escalated from the date of origination to 4th Quarter 2007 dollars using the most appropriate Engineering News Record (ENR) Cost Escalation Indices.

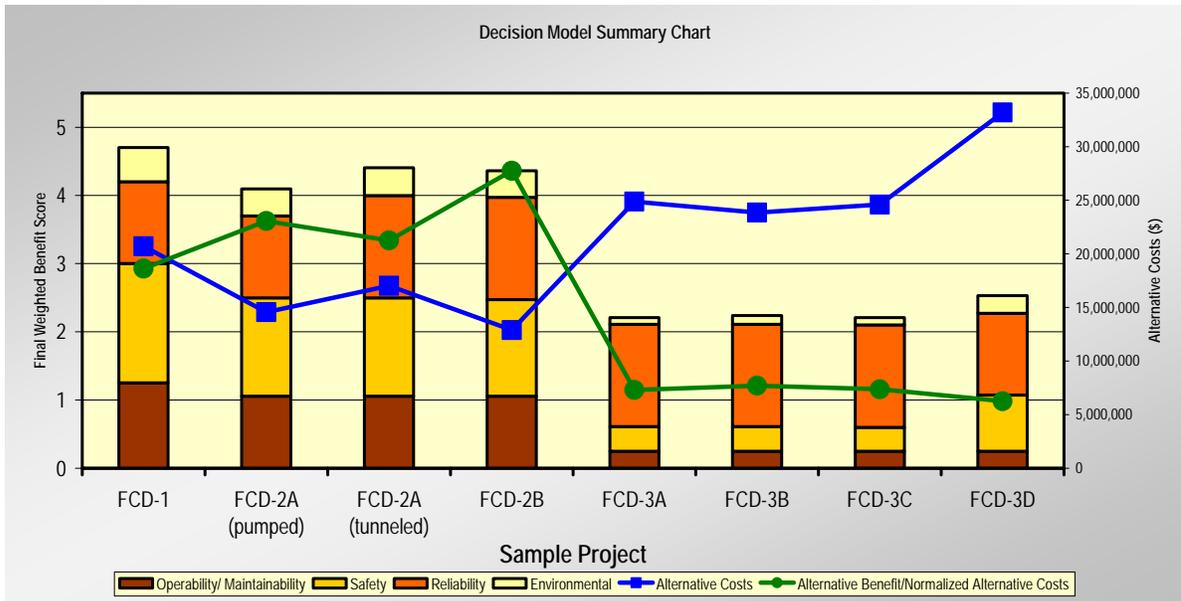
Task 5: Decision Model

An Excel based Decision Model has been created by CH2M HILL and has been used on many projects. The model will be used for the following:

- Establish project Criteria (typically goals or success factors) and determine a scoring system for each
- Prioritize the Criteria using a process called Forced Ranking, to develop a Weighting for each Criteria
- Insert CIP List into Model
- Score each CIP project against the Criteria, to develop a Benefit Score for each project

- Combine the 2007 Project Costs with the Benefit Scores to determine the projects with the highest Benefit to Cost ratios
- Once the model is complete, a sensitivity analysis can be performed with the model to run “what if” scenarios, which will account for opinions of staff that weren’t among the consensus, etc. to determine if any of the results change
- Three workshops are anticipated with SEMSWA to gather input on the Criteria, Scoring Process, and review of final results. It is assumed that CH2M HILL’s Project Manager will help lead the discussions, and CH2M HILL’s Senior Project Engineer will run the computer model live during the workshops.

Shown below is the typical chart output from the Decision Model:



Deliverables

The deliverables for this task are as follows:

- Decision Model Output (tabular data and a chart similar to the one above)
- Summary Technical Memorandum

Fee Estimate

The effort related to many of the steps in the decision model process is a function of the number of projects analyzed by the model. The number of projects is unknown at this time. For the purpose of this fee estimate, it is assumed that 100 projects will be included in the model.

Please see the attached fee estimate spreadsheet.

Schedule

This task is estimated to take 3 months from Notice to Proceed.

CH2M HILL FEE ESTIMATE
TASK 8: CIP PROJECT COST UPDATES AND PRIORITIZATION
8/3/2007

	Labor Category:	Project Manager	Sr. Proj. Engr.	Jr. Proj. Engr.	Office				
	2007 Rate, \$/Hr:	\$145.00	\$95.00	\$75.00	\$64.00				
ACTIVITY/TASK						Total Labor Hours	Labor Cost	Expense	Total
Project Management									
Contracting / Accounting / Invoicing / Project Management		12			6	18	\$ 2,124.00		\$ 2,124.00
Progress Meetings		6				6	\$ 870.00		\$ 870.00
Data Collection									
Obtain CIP List and General Background		4	4			8	\$ 960.00		\$ 960.00
Review of Master Plan Information									
Master Plan Collection, Copying, and Review		5	10	100	20	135	\$ 10,455.00	\$ 500.00	\$ 10,955.00
Cost Escalation									
Cost Escalation		2	10	10		22	\$ 1,990.00		\$ 1,990.00
Decision Model									
Develop Criteria and Scoring Method		8	8			16	\$ 1,920.00		\$ 1,920.00
Force Rank Criteria		8	8			16	\$ 1,920.00		\$ 1,920.00
Insert CIP List into Model				4		4	\$ 300.00		\$ 300.00
Score Each Project, Insert Values into Model		5	20	40		65	\$ 5,625.00		\$ 5,625.00
Input Cost Data			4	20		24	\$ 1,880.00		\$ 1,880.00
Run Model, Develop Benefit Ratios and Output		4	8	4		16	\$ 1,640.00		\$ 1,640.00
Sensitivity Analysis		1	4			5	\$ 525.00		\$ 525.00
Workshops (3 at 4 hours each)		12	12			24	\$ 2,880.00	\$ 45.00	\$ 2,925.00
Deliverables									
Technical Memo and Decision Model Output		4	12	4	2	22	\$ 2,148.00		\$ 2,148.00
	Total	71	100	182	28	381	\$ 35,237.00	\$ 545.00	\$ 35,782.00