

Field Sampling Protocol

Version 4.4a

January 26, 1999

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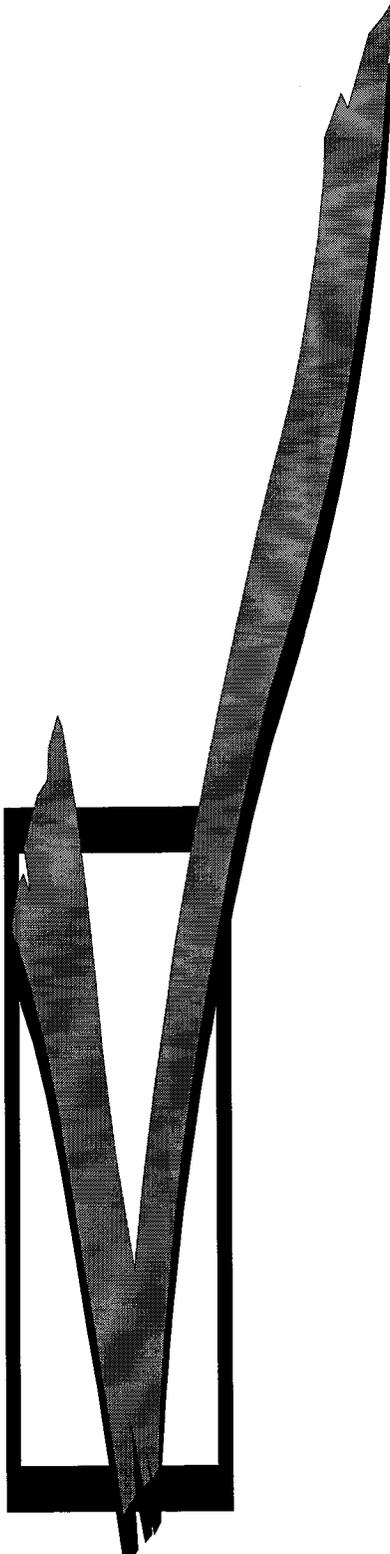


Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
602-506-1501

Table of Contents

Changes in this Edition.....	8
Priorities of the Sampling Program	9
Site Basics	11
Equipment Setup.....	12
Safety.....	13
Sampling Procedures.....	14
Grab Samples	2, 15
Composite Samples	3, 15
QC Samples	5, 17
Data Downloading	7, 18
Site Cleaning.....	6, 18
Maintenance.....	19
Appendix	20

Sampling Checklist

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- Refer to PROCEDURE SHEETS
 - Check Voice Mail
 - Check sampling status via computer, if available
 - Gather equipment - coolers, ice, pH/temperature probes, gloves, etc.
 - Call lab to alert them about incoming samples
 - Collect grab samples and return them to lab within 6 hours of collection. Collect grabs in laboratory bottles.
 - Collect composite samples
 - Hold one or two composite samples for a QC sample
 - Prepare the QC sample(s), and turn in to the lab
 - Turn composite samples in to the lab
 - Clean station equipment
 - Download data
 - Reset program

GRAB SAMPLE COLLECTION PROCEDURE

1. Bottles will be stored on site.
2. Ensure that the laboratory grab sample bottles are properly labeled before filling. For the ID number use STGmmddy for the identification number, where ST is the sample location (such as M1, M2, P1, G4, etc.), G indicates a grab sample, and mmddy is the date of the sample.
3. Place ice around the remaining jars in the sampler unit.
4. Using the grab sample apparatus, collect samples directly into the unpreserved sample bottles. Do this by lowering the apparatus to the bottom of the pipe/channel. Once at the bottom, the apparatus is slowly raised through the entire discharge depth. Repeat if the bottles are not completely filled.
5. Preserve the samples using the acids provided. The following are the quantities of acid to add and to what bottles.

40 mL vials	4 drops HCl
Blue label, one-liter amber glass bottles	20 drops HCl
Brown label, one-liter amber glass bottles	20 drops H ₂ SO ₄

No other bottles have preservatives added!

6. Place all labeled bottles into an ice chest, surrounding the bottles with ice. Place the 4 travel blank bottles into the ice chest also.
7. Collect pH and temperature data and record them on the field data sheet.
8. Record the time, date, and sample ID number on the chain of custody form.

COMPOSITE SAMPLE COLLECTION PROCEDURE

1. When program is complete, remove the composite sample jars from the sampler unit. Cap the jars and place them into a suitable carrying case or ice chest. Add ice to the case or chest.

DO NOT RESET THE SAMPLER PROGRAM AT THIS TIME. If this is done, all of the flow data will be erased. If the sampler is accidentally reset, DO NOT submit the samples to the lab. The chemical data is not useful without the flow data.

2. Fill out the Chain of Custody sheet indicating time, date, and sample ID number on the form.
3. If the contract lab is available, take the samples to the contract lab for compositing and preservation. Skip remaining steps.
4. If the contract lab is unavailable, take the samples to the Instrumentation Lab for compositing.
5. Take the composite jars for a single site and combine the contents into a single clean glass compositing jar.
6. Using a clean glass or stainless steel rod, gently stir the contents of the composite jar.
7. Using the Sample Bottle Priority sheet in the Appendix, or following the numbering on the bottles, fill the laboratory provided sample bottles using either a pipette or stopcock on the jar. The sample bottles should be filled to within one inch from the top. DO NOT overfill the bottle.
8. Fill out the Lab Analysis Sheet in the Appendix. Use a separate sheet for each site.

The compositing jar must be cleaned after each use. Use the following procedure to clean the jars, stirring rod, and pipette or stopcock.

GLASSWARE CLEANING PROCEDURE

- 1. Pour out any remaining contents, and rinse thoroughly with tap water.**
- 2. Wash the container with Liquinox® solution. Use a wire brush to scrub the inside of the container.**
- 3. Thoroughly rinse the container with tap water.**
- 4. Rinse the container with nitric acid. Pour rinsate into waste collection container.**
- 5. Rinse with deionized water.**
- 6. Rinse with acetone if the vessel is to be used again immediately. If not, allow to air dry. Pour excess acetone into waste collection container.**

Deionized water is available from the laboratory on request.

MSDS sheets are available for nitric acid and acetone, both of which are harmful chemicals.

QUALITY CONTROL SAMPLING PROCEDURES

TRAVEL BLANKS – Taken each time VOC samples are taken.

1. These are provided by the lab. Submit one set of four bottles for each cooler/container of grab samples.

SPLIT SAMPLES – minimum one per municipality per sample event

1. Using one set of jars from one site only, this sample will become the Split Sample. Both samples will be submitted the same as any storm sample.
2. Composite as described in the COMPOSITE SAMPLING PROCEDURE.
3. Fill TWO sets of composite bottles. (You will have two samples.)
4. Provide separate identification numbers for each set. One ID number will be the same as a regular composite sample. The second will use MM, GG, PP, SS, etc. in place of M1, GA, P1, etc. Place samples in ice chest and fill with ice. Fill out Chain of Custody form. Submit samples to lab.

EQUIPMENT BLANKS – One site per year per municipality

1. After sample event, clean the automatic samplers as usual. The equipment must be cleaned prior to the sampling. Clean or place clean sample bottles in the sampler base.
2. At one site per event, using the distributor tubing, pump deionized water through the tubing directly into one set of laboratory provided composite bottles.
3. Give a sample identification number in the form, LBmmddyy, where LB indicates a line equipment blank and mmddyy is the sample date. Fill out the chain of custody, and place the samples on ice.
4. Pour deionized water into the eight glass jars and then pour the water into the laboratory provided container in the second set of composite bottles.
5. Give an identification number to the set in the form Bbmmddyy. Fill out the chain-of-custody form and place the samples on ice.

EQUIPMENT CLEANING PROCEDURE

- 1. Connect cleaning tube to the distributor arm tubing.**
- 2. Pump approximately 1/2 gallon of tap water through the intake tubing.**
- 3. Pump a 1/2 gallon mixture of tap water and Liquinox® through the intake tubing.**
- 4. Pump a large amount of tap water through the intake tubing line to flush the soap out of the line.**
- 5. Pump a small amount of nitric acid (pH 3-4) through the line.**
- 6. Final rinse of 1/2 to 1 gallon deionized water through the line.**
- 7. Reconnect the distributor arm tubing on the sampler unit.**
- 8. Reset the sampler for the next storm event.**

NOTE: Deionized water can be obtained from the lab on request.

DATA DOWNLOADING PROCEDURES

800 SERIES SIGMAS (MESA, SOUTH MOUNTAIN)

At each site, the data can be downloaded onto a DTU. This procedure is necessary whenever a phone download fails, or no phone line exists. To use the DTU, connect the DTU and the sampler unit's RS-232 port. Follow the directions on the DTU unit for downloading.

Remotely, the data can be downloaded by site from a computer through the program BITCOM. Once BITCOM is started, a screen should have the sites listed.

1. Select the site to interrogate.
2. Press the Escape key and press the Enter key.
3. Once connection has been made, wait for the timer to count 20 seconds. When 20 seconds have elapsed, press C (or shift C, the C must be in capital.)
4. The data should begin to scroll. Download time takes approximately 15 minutes. The download is done when the data stops scrolling.
5. Once complete quit BITCOM. The file the data is stored in is called bitcom.tra.
6. From the C: prompt, type rename bitcom.tra siteID.sam, where siteID is MESA1 etc.
7. Then at the C: prompt, type del bitcom.tra.
8. Restart BITCOM and repeat the steps until all sites have been interrogated.

900MAX SERIES SIGMA SAMPLERS (PHOENIX SITES)

Download of data from the 900 series samplers requires a program called INSIGHT be installed on a laptop or office computer. INSIGHT allows modem or RS-232 connection to the sampler.

If connecting by modem, click on the Modem button in the Insight program. If connecting directly, click on the 900 MAX button in the program. The appropriate site should be chosen for connection. Once connection has been made, the screens will ask for the operation (in this case "Retrieve Logged Data").

A central computer will be programmed to collect data on a schedule, and assuming it works, 900 series data collection should be automated.

A DTU II can be used with the 900MAX samplers. Simply connect the RS-232 cable from the sampler to DTU II, select a data cell (1 - 20), and press data transfer. Disconnect when complete (display stops flashing and full data cell indicator is on.)

Changes from the previous Edition (v 4.3)

- 1. Sampler programs have been updated.**
- 2. Each municipality requires different analysis. Sheets are included for each.**
- 3. Glendale samplers have been added.**

1.0 Priorities

Safety of personnel is the highest priority. Care must be exercised when handling samples and sample containers, and when out on busy streets collecting samples and doing maintenance work. Sample integrity and quality is high priority. Collection, preservation, and delivery of samples to the lab take priority over any other activity, such as cleaning stations.

Please note the following items:

- Always wear latex gloves when handling samples. (Use only latex gloves.) In addition to the threat of dermal exposure to hazardous compounds, contact between skin and samples can introduce contamination to the samples resulting in false results.
- Use caution when entering manholes to service the sampler intake tubing and depth sensors. Proper Standard Operating Procedures must be followed for Confined Space Entry. Hardhats are required in manholes to protect from falling objects.
- Always keep samples as cool as possible. The regulations require samples be kept at 4 degrees Celsius. Actually cooling the samples to that temperature may not be possible. However, keeping the samples iced and as cool as possible shows a good faith effort in following the regulations. Lower temperatures discourage bacterial growth and slow the breakdown process of nutrients and organics in the sample. Always use ice during all phases of sample collection and preservation.
- Collect samples as quickly as possible. No sample should sit more than two hours once sampling has ended.
- Take composite samples to the lab for preservation ASAP or preserve samples at the office ASAP. Once samples are collected and cooled, samples should be transferred to the plastic and glass bottles/jars for delivery to the lab. Preservation of samples inhibits bacterial growth and breakdown of pollutants.
- Follow the Sample Bottle Fill priority sheet located in the Appendix. This will allow the most important parameters to be analyzed when an insufficient sample has been collected by the sampler.
- QC split samples are required for checking laboratory integrity. Split samples will be taken on ten percent of all samples.

2.0 Site Basics

The District has 14 stormwater monitoring sites that it currently maintains. There are five land-based sites in Mesa, four in Phoenix, four in Glendale, and one at South Mountain Park.

The sites are identified as follows:

MESA-1	Horne and Sixth Street	602-644-1691
MESA-2	Broadway and Lindsay	602-644-1998
MESA-3	Falcon Field	602-830-6929
MESA-4	Horne and Grandview	602-644-1455
MESA-5	Dobson and Broadway	602-644-1599
PHX-1	Salt River and 35th Avenue (north bank)	602-278-9457
PHX-2	Salt River and 67th Avenue (north bank)	no phone
PHX-3	Salt River and 40th Street (south bank)	602-470-0127
PHX-4	Indian Bend Wash and 40th Street	602-494-9926
ARROW	Skunk Creek at 79th Avenue	602-809-0277
CITRUS	Grovers at 71st Avenue	602-334-4814
INDPARK	Orangewood alignment west of New River	602-772-0842
BUTLER	Orchid Lane at 56th Drive	602-930-7101
South Mountain	Central Avenue in South Mountain Park	no phone

3.0 Equipment Setup

3.1 Site Specific Equipment

An assortment of equipment is employed in the notification and sampling efforts.

The five sites in Mesa have identical setups. The following equipment is used:

- Sigma 800 SL Automatic Sampler with integral flowmeter
- 8 jar configuration, jar volume = 1900 mL (15.2L total)
- Autodialer
- Modem
- Raingauge

Four sites in Phoenix and four in Glendale have identical setups. The following equipment is used:

- Sigma 900 MAX Automatic sampler with integral flowmeter, modem, and dialout alarm.
- 8 jar configuration, jar volume = 1900 mL (15.2L total)
- Raingauge

The site at South Mountain will have the following setup. There will be no phone communications.

- Sigma 800 SL Automatic Sampler with integral flowmeter
- Raingauge

3.2 Programming of Equipment

Specific programming for each site is included in the Appendix.

5.0 Sampling Procedures

5.1 Sampler Storm Setup

Samplers must be readied for sampling within 3 days after the previous storm event. A number of bottles are necessary for the proper collection and preservation of the samples for analysis. Grab sample bottles will be kept at each site with lids tightly closed. Composite sample bottles will be kept at the District office. Clean sampler jars will be kept at the District office.

Each municipality has different grab sample requirements. The table below gives the requirements for each.

GLENDALE	MESA	PHOENIX
1 1-liter plastic, unpreserved	1 1-liter plastic, unpreserved	1 1-liter plastic, unpreserved
2 100mL plastic, Na ₂ SO ₄ preserved	2 100mL plastic, Na ₂ SO ₄ preserved	2 100mL plastic, Na ₂ SO ₄ preserved
4 40mL glass vials, HCl preserved	4 40mL glass vials, HCl preserved	4 40mL glass vials, HCl preserved
1 1-liter amber glass, H ₂ SO ₄ preserved	1 1-liter amber glass, H ₂ SO ₄ preserved	1 1-liter amber glass, H ₂ SO ₄ preserved
		1 1-liter amber glass, HCl preserved
		4 1-liter amber glass, non-preserved

Preservation of the grab bottles is done in the field after each is collected. Amount of preservative to add to each bottle is given in the **GRAB SAMPLE COLLECTION PROCEDURE**, in the front of this manual.

Site identification should be placed on the bottles before filling, and before the storm event. It is difficult to write on wet labels, whether it is from sample spillage or from rainwater. The travel blank bottles should have the site identification listed on them also.

In addition to the grab bottles, fourteen sets of laboratory composite bottles should be on hand at the District office. This allows us to composite and preserve the samples at the office should the contract laboratory not be available.

One full set of composite sample bottles contains the following:

GLENDALE	MESA	PHOENIX
2 1-liter plastic, unpreserved	1 500 mL plastic HNO ₃ preserved	1 500 mL plastic HNO ₃ preserved
2 500 mL plastic, H ₂ SO ₄ preserved	4 1-liter amber glass, unpreserved	2 1-liter plastic, unpreserved
1 500 mL plastic HNO ₃ preserved	2 1-liter plastic, unpreserved	2 1-liter plastic, H ₂ SO ₄ preserved
1 500 mL plastic, NaOH preserved	2 1-liter plastic, H ₂ SO ₄ preserved	1 1-liter amber glass H ₂ SO ₄ preserved
1 1-liter amber glass H ₂ SO ₄ preserved		1 500 mL plastic, NaOH preserved
4 1-liter amber glass, unpreserved		
1 1-liter plastic, H ₂ SO ₄ preserved		

This list is going to be revised to reflect different requirements among the municipalities. A list of the specific requirements is located in the Appendix.

5.2 Sample Event

5.2.1 General

All samplers in Glendale, Mesa, and Phoenix are set to activate when 0.05 inch of rain, and 0.5 inch of water level is reached at the gauge. South Mountain is set to activate on level only because it is likely that there will be many rain events without flow, or rain events may occur before flow begins.

Mesa samplers have an autodialer at each site which, when working, will call the stormwater voice mail number of 602-372-4809 and leave messages which are then forwarded to voice mail boxes of the sampling leader. Glendale and Phoenix samplers have a built-in notification feature. This feature allows the sampler to notify the sampling team via pagers of its status. Furthermore, the FCD ALERT system has rain gauges located near or at some of the sampling sites. The ALERT system will then call the voice mail number and indicate that rainfall has occurred at one or more sampling locations. This is especially useful for the Mesa sampling sites.

5.2.2 Grab Samples

Grab samples are collected from the discharge as near to the sample intake line in the pipe as possible. Temperature and pH are taken at this time and recorded on the Field Data Sheet. If it is apparent that the storm has ended and there is very little flow in the pipe/channel, grab samples should not be collected.

The grab sample apparatus is loaded with bottles. The apparatus is lowered into the pipe/channel for collection. To get as representative a sample as possible, once the apparatus is at the bottom of the channel/pipe, the apparatus is raised slowly through the entire discharge.

The two bacterial samples have a short hold time of six hours. The sample must be transported to the lab within six hours of collection. Proper coordination with the lab must be done to ensure that this six-hour window is met.

As mentioned previously, chilling the samples is extremely important. Ice is to be taken to all of the sites and placed around the jars in the sampler unit to keep the pumped samples as cool as possible. Samples remaining at ambient temperatures run the risk of having their chemical content altered from bacterial action and/or volatilization.

As an artifact of the actual storm sampling program in the Sigma samplers, the Phoenix and Glendale samplers are programmed to automatically collect a first flush grab sample as soon as the sampler has been activated. This first flush sample will not be collected or analyzed. This sample is in the first bottle only and is only 100 mL. The Mesa Sigma sampling equipment does not have this requirement and will not collect any first flush grab sample.

South Mountain

For the South Mountain sampler, a single sample will be distributed into all eight jars. The samples at this site can be collected by the automatic sampler because no bacteria, volatile organic, or oil & grease compounds will be analyzed.

The contents of the eight jars are poured into the laboratory provided sample bottles. Begin the filling from the first jar and progress to jar eight. Put the bottles in a cooler and surround by ice.

5.2.3 Composite Samples

Along with the grab samples, a flow-weighted composite sample is collected. This sample is based on a set quantity of water passing over the flow sensor between

each aliquot collection. Each site has a different flow interval, based on site characteristics.

The composite will require from 3 to 16 hours to complete, depending upon the strength and intensity of the storm. In general, sampling is usually complete within a few hours. No sample should sit more than three hours once sampling is complete.

Sigma sampling equipment will indicate on the sampler unit's display if the program is complete. Occasionally, insufficient flow is produced from the storm to complete a sampling routine.

Composite samples will be collected in jars 2 through 8 in the Sigma samplers in the Glendale and Phoenix samplers, and all eight jars in the Mesa samplers. The method for collecting, compositing, and preserving composite sample is given below.

Once the sampler is complete, or flow has stopped, remove the jars from the automatic sampler. Cap the jars and place them in a carrying case or an ice chest. Note the date, time, and sample number on a chain-of-custody form and in the Field Log Book.

If the contract lab is available, the samples will be transported to and composited by them. If the lab is not available, the samples will be first transported to the Instrumentation Lab for compositing and then to the contract lab for analysis.

To composite, take jars 2 through 8 for a single site and pour the contents into a large vessel. Using a clean glass rod, gently stir the contents. Fill the laboratory provided preserved bottles. If only a small amount of sample is collected, fill the bottles according to the numbering marked on the bottles. After filling all bottles (or as many as possible), clean the vessel and repeat the procedure with the remaining sites. Once complete, transport the samples to the contract lab.

5.2.4 Representative Events

Though we respond to many storms, the municipalities, within their operating permits, have established criteria for types of storms that are acceptable. Actual criteria are not presented here. Nevertheless, in general, rainfall totals must be between 0.20 and 0.75 inches, and there must be more than 72 hours without precipitation. Anything outside these boundaries are automatically rejected and will not require response.

5.2.5 Quality Control Samples

To ensure that the data received from the lab is of highest quality, and to assess the cleanliness of the sample equipment, three types of QC samples will be submitted. Travel blanks, equipment blanks, and split samples will be assessed. Travel blanks have been mentioned previously in the grab sample section.

Travel Blanks

The laboratory furnishes the travel blanks. These are used to assess whether contamination was introduced during transport of volatile organic samples to the lab.

There must be one set (4 bottles) of travel blanks per cooler/container that contain the 40-mL vials sampled.

Split Samples

Split samples will assess the accuracy of the laboratory analyses. One or two sites will be chosen for split samples for a given storm event.

A sample will be collected in the usual manner, but will be brought to the District Instrumentation Lab instead of being taken to the lab for compositing. District personnel will composite the sample using the procedure given above. A special set of laboratory provided bottles will be used. The set will consist of two of each bottle type. Each 'pair' is filled in succession. The sample sets are given different sample identification numbers. The samples are submitted to the lab just as any other samples, with no mention made to the lab that this is a duplicate sample.

Splits will be analyzed for the list required by the municipality in which the split sample originated.

Equipment Blanks

The equipment blank will measure the effectiveness of the cleaning program of the sampling equipment.

One site will be evaluated per year. The equipment is cleaned in the usual manner according to the instructions. After the cleaning, deionized water is pumped through the intake tubing directly into laboratory bottles for analysis.

The equipment blanks will be analyzed for the pollutants required by the municipality in which the samples was taken.

5.3 Post Sample

5.3.1 Flow Data Collection

It is desirable to collect the flow data remotely from the office. However, this is not always possible due to modem problems or lack of a phone line. As required, data will be collected in the field using a DTU. A different DTU is required for the Sigma 800 SL and the Sigma 900 MAX.

5.3.2 Post Event Cleaning

Cleaning of the sample equipment is very important in obtaining high quality samples. The sample jars should be cleaned according to the GLASSWARE CLEANING PROCEDURE, and the intake tubing line should be cleaned according to the EQUIPMENT CLEANING PROCEDURE. The contract lab will clean the sample jars when they are taken to the lab for compositing.

6.0 Periodic Maintenance

6.1 Six Month Maintenance

1. Check and calibrate the depth sensor
2. Check and calibrate the pumped sample volume
3. Check and clean rain gauges of debris
4. Inspect sample intake line, connect cables, connections, pump tubing, distributor tubing, batteries, solar panels, batteries, charging system
5. Make any repairs or replacements as necessary.

6.2 Annual Maintenance

1. Perform the Six Month Maintenance
2. Replace sample intake tubing with new Teflon tubing
3. Replace sampler pump tubing
4. Replace distributor tubing
5. Rinse new intake tubing with deionized water

6.3 As Needed Maintenance

Some of the six-month and annual maintenance may be required more frequently. This is determined on a site-by-site basis.

As equipment ages and fails, equipment should be replaced as quickly as possible. A small inventory of parts should be on-hand to replace failed parts. Replacement of stocked parts should be done within 2 weeks of problem report. Ordered parts should be replaced within a week of being received. As equipment is replaced, calibrations need to be performed.

6.4 Recordkeeping

A maintenance log is kept at each site. The log is part of a larger quality assurance and quality control program.

Maintenance records should include the date, time, personnel doing the service, and a description of the service done. A specific sheet is available for recording maintenance activities.

Copies of all record keeping sheets are in the Appendix.

All records are kept at the District offices.

Appendix

WATER QUALITY SAMPLER MAINTENANCE LOG SHEET

SITE		DATE	
ARRIVAL TIME		DEPARTURE TIME	SERVICED BY
SAMPLER MODEL NUMBER		SAMPLER SERIAL/ ASSET NUMBER	
PT SERIAL NUMBER/ ASSET NUMBER		RAINGAGE SERIAL/ ASSET NUMBER	

	CHECKED/ SERVICED/ CALIBRATED	CONDITION	REPLACED?	NEEDS REPLACING?	NOTES
BATTERY VOLTAGE	YES NO	GOOD FAIR POOR	YES NO	YES NO	volts
SOLAR PANEL	YES NO N/A	GOOD FAIR POOR	YES NO	YES NO	
CONNECTION CABLES	YES NO	GOOD FAIR POOR	YES NO	YES NO	
RAINGAGE	YES NO	GOOD FAIR POOR	YES NO	YES NO	
SAMPLE INTAKE TUBING	YES NO	GOOD FAIR POOR	YES NO	YES NO	length (feet)
SAMPLER PUMP TUBING	YES NO	GOOD FAIR POOR	YES NO	YES NO	
SAMPLER DISTRIBUTOR TUBING	YES NO	GOOD FAIR POOR	YES NO	YES NO	
DEPTH SENSOR	YES NO	GOOD FAIR POOR	YES NO	YES NO	depth (inch)
CALIBRATE DEPTH SENSOR	YES NO	GOOD FAIR POOR	N/A	N/A	
CALIBRATE SAMPLE VOLUME	YES NO	GOOD FAIR POOR	N/A	N/A	mL
CLEANED SAMPLE INTAKE TUBING	YES NO	GOOD FAIR POOR	N/A	N/A	

NOTES / ACTIONS

STORM EVENT LOG SHEET

SITE:	
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DATE:		TIME:	
-------	--	-------	--

DID EQUIPMENT OPERATE PROPERLY DURING EVENT: YES NO

IF NO, WHAT WERE PROBLEM(S):

FIELD PARAMETERS:

Sampler Start Time	
--------------------	--

Effluent pH	
-------------	--

Effluent Temperature	
----------------------	--

GRAB SAMPLES:

Take grab samples from discharge only!

Grab Samples Taken?

YES

NO

Preservatives added to bottles?

YES

NO

GLENDALE NPDES STORMWATER ANALYSIS FORM

SITE _____ DATE _____

GRAB SAMPLE

			<u>Bottle(s) Required</u>
<input checked="" type="checkbox"/>	BOD5	405.1	1- 1 liter plastic, unpreserved
<input checked="" type="checkbox"/>	Fecal Coliform	9222C	1- bacterial bottle, tablet preserved
<input checked="" type="checkbox"/>	Fecal Streptococci	9230C	1- bacterial bottle, tablet preserved
<input checked="" type="checkbox"/>	Oil and Grease	413.1	1- 1 liter glass, unpreserved
<input checked="" type="checkbox"/>	Purgeables	EPA 624	4- 40 mL glass vials, unpreserved

COMPOSITE SAMPLE

Inorganic Chemistry - Non-Metals

<input checked="" type="checkbox"/>	Cyanide	335.3	<input checked="" type="checkbox"/>	Nitrogen, Kjeldahl	351.3
<input checked="" type="checkbox"/>	COD	410.1	<input checked="" type="checkbox"/>	Phosphorous, Total	365.2
<input checked="" type="checkbox"/>	Chloride	300.0	<input checked="" type="checkbox"/>	Phosphorous, Dissolved	365.3
<input checked="" type="checkbox"/>	Total Dissolved Solids	160.1	<input checked="" type="checkbox"/>	Phosphorous, Ortho	365.2
<input checked="" type="checkbox"/>	Total Suspended Solids	160.1	<input checked="" type="checkbox"/>	Phenolics	420.1
<input checked="" type="checkbox"/>	Nitrogen, Ammonia	350.3	<input checked="" type="checkbox"/>	Organic Carbon, Total	415.1
<input checked="" type="checkbox"/>	Nitrogen, Nitrate	353.2	<input checked="" type="checkbox"/>	Alkalinity, Total	310.1
<input checked="" type="checkbox"/>	Nitrogen, Nitrite	353.2	<input checked="" type="checkbox"/>	Hardness	130.2
<input checked="" type="checkbox"/>	Nitrogen, NO2+NO3	353.2	<input checked="" type="checkbox"/>	Sulfate, Dissolved	375.3
<input checked="" type="checkbox"/>	Nitrogen, Organic	351.4			

Inorganic Chemistry - Metals, Total and Dissolved

<input checked="" type="checkbox"/>	Antimony, Total	200.7	<input checked="" type="checkbox"/>	Lead, Total	239.2
<input checked="" type="checkbox"/>	Antimony, dissolved	200.7	<input checked="" type="checkbox"/>	Lead, dissolved	239.2
<input checked="" type="checkbox"/>	Arsenic, Total	200.7	<input checked="" type="checkbox"/>	Mercury, Total	245.1
<input checked="" type="checkbox"/>	Arsenic, dissolved	200.7	<input checked="" type="checkbox"/>	Mercury, dissolved	245.1
<input checked="" type="checkbox"/>	Beryllium, Total	200.7	<input checked="" type="checkbox"/>	Nickel, Total	249.2
<input checked="" type="checkbox"/>	Beryllium, dissolved	200.7	<input checked="" type="checkbox"/>	Nickel, dissolved	249.2
<input checked="" type="checkbox"/>	Cadmium, Total	213.2	<input checked="" type="checkbox"/>	Selenium, Total	200.7
<input checked="" type="checkbox"/>	Cadmium, dissolved	213.2	<input checked="" type="checkbox"/>	Selenium, dissolved	200.7
<input checked="" type="checkbox"/>	Chromium, Total	218.2	<input checked="" type="checkbox"/>	Silver, Total	200.7
<input checked="" type="checkbox"/>	Chromium, dissolved	218.2	<input checked="" type="checkbox"/>	Silver, dissolved	200.7
<input checked="" type="checkbox"/>	Copper, Total	220.2	<input checked="" type="checkbox"/>	Thallium, Total	200.7
<input checked="" type="checkbox"/>	Copper, dissolved	220.2	<input checked="" type="checkbox"/>	Thallium, dissolved	200.7
<input type="checkbox"/>			<input checked="" type="checkbox"/>	Zinc, Total	289.2
<input type="checkbox"/>			<input checked="" type="checkbox"/>	Zinc, dissolved	289.2

Organic Compounds

<input checked="" type="checkbox"/>	Chlorinated Pesticides	608	<input checked="" type="checkbox"/>	Base/Neutral/Acid Extractable	625
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MESA NPDES STORMWATER ANALYSIS FORM

SITE _____ DATE _____

GRAB SAMPLE

			Bottle(s) Required
<input checked="" type="checkbox"/>	BOD5	405.1	1- 1 liter plastic, unpreserved
<input checked="" type="checkbox"/>	Fecal Coliform	9222C	1- bacterial bottle, tablet preserved
<input checked="" type="checkbox"/>	Fecal Streptococci	9230C	1- bacterial bottle, tablet preserved
<input checked="" type="checkbox"/>	Oil and Grease	413.1	1- 1 liter amber glass, unpreserved
<input checked="" type="checkbox"/>	Methylene Chloride	EPA 624	4- 40 mL glass vials, unpreserved
<input checked="" type="checkbox"/>	Toluene	EPA 624	from above

COMPOSITE SAMPLE

Inorganic Chemistry - Non Metals

<input type="checkbox"/>			<input checked="" type="checkbox"/>	Nitrogen, Organic	351.4
<input checked="" type="checkbox"/>	COD	410.1	<input checked="" type="checkbox"/>	Nitrogen, Kjeldahl	351.3
<input checked="" type="checkbox"/>	Total Dissolved Solids	160.1	<input checked="" type="checkbox"/>	Phosphorous, Total	365.2
<input checked="" type="checkbox"/>	Total Suspended Solids	160.1	<input checked="" type="checkbox"/>	Phosphorous, Dissolved	365.3
<input checked="" type="checkbox"/>	Nitrogen, Ammonia	350.3	<input checked="" type="checkbox"/>	Hardness	130.2
<input checked="" type="checkbox"/>	Nitrogen, Nitrate	353.2	<input type="checkbox"/>		

Inorganic Chemistry - Metals, Total and Dissolved

<input checked="" type="checkbox"/>	Cadmium, Total	213.2	<input checked="" type="checkbox"/>	Lead, Total	239.2
<input checked="" type="checkbox"/>	Cadmium, dissolved	213.2	<input checked="" type="checkbox"/>	Lead, dissolved	239.2
<input checked="" type="checkbox"/>	Chromium, Total	218.2	<input checked="" type="checkbox"/>	Mercury, Total	245.1
<input checked="" type="checkbox"/>	Chromium, dissolved	218.2	<input checked="" type="checkbox"/>	Mercury, dissolved	245.1
<input checked="" type="checkbox"/>	Copper, Total	220.2	<input checked="" type="checkbox"/>	Zinc, Total	289.2
<input checked="" type="checkbox"/>	Copper, dissolved	220.2	<input checked="" type="checkbox"/>	Zinc, dissolved	289.2
<input type="checkbox"/>			<input type="checkbox"/>		
<input type="checkbox"/>			<input type="checkbox"/>		

Organic Compounds

<input checked="" type="checkbox"/>	DDE	608	<input checked="" type="checkbox"/>	Fluoroanthene	625
<input checked="" type="checkbox"/>	Benzo(a) Anthracene	625	<input checked="" type="checkbox"/>	Indeno (1,2,3-cd) Pyrene	625
<input checked="" type="checkbox"/>	Chrysene	625	<input checked="" type="checkbox"/>	Pyrene	625
<input type="checkbox"/>			<input type="checkbox"/>		

PHOENIX NPDES STORMWATER ANALYSIS FORM

SITE _____ DATE _____

GRAB SAMPLE

		<u>Bottle(s) Required</u>
<input checked="" type="checkbox"/>	Total Petroleum Hydrocarbon	418.1
<input checked="" type="checkbox"/>	Fecal Coliform	9222C
<input checked="" type="checkbox"/>	Fecal Streptococci	9230C
<input checked="" type="checkbox"/>	Oil and Grease	413.1
<input checked="" type="checkbox"/>	Purgeables (Acetone)	EPA 624
<input checked="" type="checkbox"/>	DDE	EPA 608
<input checked="" type="checkbox"/>	Chrysene	EPA 625
<input checked="" type="checkbox"/>	Benzoic Acid	EPA 625
<input checked="" type="checkbox"/>	Phenol	EPA 625

COMPOSITE SAMPLE

Inorganic Chemistry - Non-Metals

<input checked="" type="checkbox"/>	BOD	405.1	<input checked="" type="checkbox"/>	Nitrogen, Kjeldahl	351.3
<input checked="" type="checkbox"/>	COD	410.1	<input checked="" type="checkbox"/>	Phosphorous, Total	365.2
<input checked="" type="checkbox"/>	Cyanide	353.3	<input checked="" type="checkbox"/>	Hardness	130.2
<input checked="" type="checkbox"/>	Total Dissolved Solids	160.1	<input checked="" type="checkbox"/>	Phosphorous, Ortho	365.2
<input checked="" type="checkbox"/>	Total Suspended Solids	160.1	<input checked="" type="checkbox"/>	Phenolics	420.1
<input checked="" type="checkbox"/>	Nitrogen, Ammonia	350.3			
<input checked="" type="checkbox"/>	Nitrogen, Nitrate	Computation			
<input checked="" type="checkbox"/>	Nitrogen, Nitrite	353.2			
<input checked="" type="checkbox"/>	Nitrogen, NO ₂ +NO ₃	353.2			

Inorganic Chemistry - Metals, Total and Dissolved

<input checked="" type="checkbox"/>	Arsenic, Total	200.7	<input checked="" type="checkbox"/>	Lead, Total	239.2
<input checked="" type="checkbox"/>	Arsenic, dissolved	200.7	<input checked="" type="checkbox"/>	Lead, dissolved	239.2
<input checked="" type="checkbox"/>	Beryllium, Total	200.7	<input checked="" type="checkbox"/>	Nickel, Total	249.2
<input checked="" type="checkbox"/>	Beryllium, dissolved	200.7	<input checked="" type="checkbox"/>	Nickel, dissolved	249.2
<input checked="" type="checkbox"/>	Cadmium, Total	213.2	<input checked="" type="checkbox"/>	Silver, Total	200.7
<input checked="" type="checkbox"/>	Cadmium, dissolved	213.2	<input checked="" type="checkbox"/>	Silver, dissolved	200.7
<input checked="" type="checkbox"/>	Chromium, Total	218.2	<input checked="" type="checkbox"/>	Zinc, Total	289.2
<input checked="" type="checkbox"/>	Chromium, dissolved	218.2	<input checked="" type="checkbox"/>	Zinc, dissolved	289.2
<input checked="" type="checkbox"/>	Copper, Total	220.2			
<input checked="" type="checkbox"/>	Copper, dissolved	220.2			

EQUIPMENT CLEANING CHECKLIST

Site

Date

Time

Serviced By:

Data Downloaded to DTU?

1. Halt program
2. Connect extension tubing to the distributor tubing on the underside of the sampler.
3. Press the Purge Key on 800 models or the Manual key on 900 models.
4. On 900 models, press the Pump Operation key and then the select Purge.
5. Follow the steps below and check each as it is done.

Pump approximately 1/2 gallon tap water through tubing.

Pump approximately 1/2 gallon of Liquinox through tubing.

Pump a large quantity of tap water through tubing.

Pump a small amount of Nitric Acid (pH 3 - 4) through tubing.

Pump approximately 1/2 - 1 gallon deionized water through tubing.

6. Disconnect the extension tubing and make sure the distributor tubing is seated properly.
7. Replace the base and clean bottles.
8. If the data has been downloaded to the DTU, START the program from the beginning.
9. If the data has not been downloaded, RESUME the program.

South Mountain Stormwater Sampler
Sigma Stormwater Sampler Program

To begin programming the sampler, press the #2 key (change/halt)
Enter 8000 as the access code

Press the * key

- | | | |
|-----|--------------------------------------|--|
| 1. | Advanced Program Features | <u>yes</u> |
| 2. | Number of Sample Bottles | <u>8</u> |
| 3. | Units for Bottle Volume | <u>mL</u> |
| 4. | Bottle Volume | <u>1900 mL</u> |
| 5. | Enter Units for Tubing Length | <u>Feet</u> |
| 6. | Length of Intake Tubing
replaced) | <u>33 feet</u> (Change each time tubing is |
| 7. | Program Lock? | <u>Yes</u> |
| 8. | Enable Internal Flowmeter? | <u>Yes</u> |
| 9. | Flow Units | <u>CFS</u> |
| 10. | Program Delay? | <u>No</u> |
| 11. | Timed Mode? | <u>Yes</u> |
| 12. | Variable Interval? | <u>No</u> |
| 13. | Interval | <u>5 Min</u> |
| 14. | Discrete Mode? | <u>Yes</u> |
| 15. | Bottles/Sample? | <u>Yes</u> |
| 16. | Number of Bottles/Sample? | <u>4</u> |
| 17. | Change Volume? | <u>No/Yes</u> |
| 18. | Sample Volume | <u>1875 mL</u> |
| 19. | Calibrate Volume? | <u>No/Yes</u> |
| 20. | Intake Rinses? | <u>Yes</u> |
| 21. | Rinse Cycles? | <u>1</u> |
| 22. | Intake Faults? | <u>Yes</u> |
| 23. | Intake Faults | <u>2</u> |
| 24. | Enter ID | <u>0101</u> |
| 25. | Set Up Flowmeter? | <u>Yes</u> |
| 26. | Manning Formula | <u>Yes</u> |
| 27. | Pipe ID | <u>72.00</u> (Be sure to enter 7200) |
| 28. | Roughness= | <u>0.013</u> |
| 29. | Slope= | <u>4.00/100</u> |
| 30. | Flow Recording Interval | <u>1 min</u> |
| 31. | Calibrate Depth Sensor? | <u>No/Yes</u> (Yes during maintenance) |
| 32. | Set Current Water Level | <u>Enter current level if known</u> |

-Ready to Start-
proceed to page 2
Page 2

Program for storm sampling

Press and hold the clear entry key

- | | | |
|-----|-----------------------|-----------------------|
| 1. | Level control? | <u>Yes</u> |
| 2. | Storm Mode? | <u>Yes</u> |
| 3. | External Start? | <u>No</u> |
| 4. | Start on | <u>Rain and Depth</u> |
| 5. | Rain = | <u>0.05 inch</u> |
| 6. | Rainfall Time Limit = | <u>999 min</u> |
| 7. | Level = | <u>1.0 inch</u> |
| 8. | First Flush Period | <u>0</u> |
| 9. | Sample Time limit? | <u>No</u> |
| 10. | Special Output? | <u>Yes</u> |
| 11. | Sample Output? | <u>No</u> |
| 12. | Event Output? | <u>Yes</u> |

-Ready to start-

Programming is complete. Press the START SAMPLING key to initiate the program/sampler.

Mesa Samplers (Sigma 800 Series)
Sigma Stormwater Sampler Program

To begin programming the sampler, press the #2 key (change/halt)
Enter 8000 as the access code, if requested.

Press the * key

- | | | |
|-----|--|---|
| 1. | Advanced Program Features | <u>yes</u> |
| 2. | Number of Sample Bottles | <u>8</u> |
| 3. | Units for Bottle Volume | <u>mL</u> |
| 4. | Bottle Volume | <u>1900 mL</u> |
| 5. | Enter Units for Tubing Length | <u>Feet</u> |
| 6. | Length of Intake Tubing | <u>M1 = 50 feet</u>
<u>M2 = 48 feet</u>
<u>M3 = 27 feet</u>
<u>M4 = 75 feet</u>
<u>M5 = 70 feet</u> |
| | (check field book
for exact length) | |
| 7. | Program Lock? | <u>No</u> |
| 8. | Enable Internal Flowmeter? | <u>Yes</u> |
| 9. | Flow Units | <u>CFS</u> |
| 10. | Program Delay? | <u>No</u> |
| 11. | Flow Mode? | <u>Yes</u> |
| 12. | Variable Interval? | <u>No</u> |
| 13. | Interval | <u>M1 = 500 cu. Ft. (Enter 5)</u>
<u>M2 = 2000 cu. Ft. (Enter 20)</u>
<u>M3 = 4500 cu. Ft. (Enter 45)</u>
<u>M4 = 1500 cu. Ft. (Enter 15)</u>
<u>M5 = 1500 cu. Ft. (Enter 15)</u> |
| 14. | Timed Override? | <u>No</u> |
| 15. | Discrete Mode? | <u>Yes</u> |
| 16. | Samples/Bottles? | <u>Yes</u> |
| 17. | Number of Samples/Bottles | <u>4</u> |
| 18. | Change Volume? | <u>No/Yes</u> |
| 19. | Sample Volume | <u>450 mL</u> |
| 20. | Calibrate Volume? | <u>No/Yes</u> |
| 21. | Intake Rinses? | <u>Yes</u> |
| 22. | Rinse Cycles? | <u>1</u> |
| 23. | Intake Faults? | <u>Yes</u> |
| 24. | Intake Faults | <u>2</u> |

- | | | |
|-----|-------------------------|---|
| 25. | Enter ID | <u>1001 SIXTH</u>
<u>1002 LINDSAY</u>
<u>1003 FALCON</u>
<u>1004 GRANDVIEW</u>
<u>1005 DOBSON</u> |
| 26. | Set Up Flowmeter? | <u>Yes</u> |
| 27. | Manning Formula | <u>Yes</u> |
| 28. | Pipe ID | <u>M1 = 36.00 (Be sure to enter 3 6 0 0)</u>
<u>M2 = 72.00 (Be sure to enter 7 2 0 0)</u>
<u>M3 = 48.00 (Be sure to enter 4 8 0 0)</u>
<u>M4 = 54.00 (Be sure to enter 5 4 0 0)</u>
<u>M1 = 30.00 (Be sure to enter 3 0 0 0)</u> |
| 29. | Roughness= | <u>0.015</u> |
| 30. | Slope= | <u>M1 = 0.29/100</u>
<u>M2 = 0.11/100</u>
<u>M3 = 0.14/100</u>
<u>M4 = 0.40/100</u>
<u>M5 = 0.14/100</u> |
| 31. | Flow Recording Interval | <u>1 min</u> |
| 32. | Calibrate Depth Sensor? | <u>No/Yes (Yes during maintenance)</u> |
| 33. | Set Current Water Level | <u>Enter current level if known</u> |

-Ready to Start-

Press and hold the clear entry key

- | | | |
|-----|----------------------|---------------------------------------|
| 1. | Level control? | <u>Yes</u> |
| 2. | Storm Mode? | <u>Yes</u> |
| 3. | External Start? | <u>No</u> |
| 4. | Start on | <u>Rain and Depth (fourth choice)</u> |
| 5. | Rain = | <u>0.05 inch</u> |
| 6. | Rainfall Time Limit= | <u>60 min</u> |
| 7. | Level = | <u>0.5 inch</u> |
| 8. | First Flush Period | <u>0 min</u> |
| 9. | Sample Time limit? | <u>500 summer / 1000 winter</u> |
| 10. | Special Output? | <u>Yes</u> |
| 11. | Sample Output? | <u>No</u> |
| 12. | Event Output? | <u>Yes</u> |

-Ready to start-

Programming is complete. Press the START SAMPLING key to initiate the program/sampler.

Phoenix (900MAX series)
Sigma Stormwater Sampler Program

Some Basic Program Notes:

To start sampling: press the **RUN/STOP** key and follow the directions.

To see the current status, Press the **STATUS** key from the **MAIN MENU**.

The **MAIN MENU** key can be pressed at any time to return to that point.

The **password** is **9000**.

To look at data, press **DISPLAY DATA** from the **MAIN MENU** and follow prompts.

1. Press the **MAIN MENU** key.
2. Press the **SETUP** key at the upper right side of the display.
3. Press the **MODIFY ALL ITEMS** key at the upper right side of the display.
4. **Number of bottles: 8**
if **8** is displayed, press **ACCEPT**
if **8** is not displayed, press **CHANGE CHOICE** until **8** appears, then press **ACCEPT**.
5. **Bottle Volume: 1900 mL**
if **1900 mL** is displayed, press **ACCEPT**
if **1900 mL** not displayed,
Press **CHANGE UNITS** to change to **mL AND**
Enter **1900** and press **ACCEPT**.
6. **Intake Tubing Length:**

PHX1	26 ft
PHX2	21 ft
PHX3	19 ft
PHX4	21 ft

if the correct value is displayed, press **ACCEPT**
if the correct value is not displayed, enter the correct value and press **ACCEPT**.
7. **Intake Tubing Type: 3/8" vinyl (tubing is actually Teflon)**
if **3/8" vinyl** is displayed, press **ACCEPT**
if **3/8" vinyl** is not displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.
8. **Program Lock: Disabled**
if **disabled** is displayed, press **ACCEPT**
if **disabled** is displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.

9. **Program Delay: Disabled**
if **disabled** is displayed, press **ACCEPT**
if **enabled** is displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.
10. **Sample Collection: Flow Proportional**
if **flow proportional** is displayed, press **ACCEPT**
if **flow proportional** is not displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.
11. **Flow Pacing Mode: CONST VOL/VAR TIME**
if **Const Vol/Var Time** is displayed, press **ACCEPT**
if **Const Vol/Var Time** is not displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.
12. **Flow Meter: Integral**
if **integral** is displayed, press **ACCEPT**
if **integral** is not displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.
13. **Take Sample Every: (PHX 1: 3000 cf, PHX 2: 2000 cf, PHX 3: 300 cf, PHX 4: 2000 cf)**
if **xxxx cf** appears in the display, press **ACCEPT**
if **xxxx cf** does not appear in the display,
press **CHANGE UNITS** to get **CF, AND**
enter **xxxx** and press **ACCEPT**.
14. **Timed Override?: Disabled**
if **disabled** appears in the display, press **ACCEPT**
if **enabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
15. **Take First Sample: Immediately**
if **immediately** appears in the display, press **ACCEPT**
if **immediately** does not appear in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
16. **Deliver Each Sample To All Bottles?: No**
If **no** appears in the display, press **ACCEPT**
If **yes** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
17. **Choose a Method of Distribution: Samples/Bottle**
If **Samples/Bottle** appears in the display, press **ACCEPT**.
If **Bottles/Sample** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
18. **Samples/Bottle: 4**
If **4** appears in the display, press **ACCEPT**.
If **4** does not appear in the display, enter **4** and press **ACCEPT**.

19. **Liquid Sensors: Enabled**
 If **enabled** appears in the display, press **ACCEPT**
 If **disabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
20. **Sample Volume: 450 mL**
 If **450 mL** appears in the display, press **ACCEPT**
 If **450 mL** does not appear in the display, enter **450** and press **ACCEPT**.
21. **Intake Rinses: 2**
 If **2** appears in the display, press **ACCEPT**
 If **2** does not appear in the display, enter **2** and press **ACCEPT**.
22. **Sample Retries: 2**
 If **2** appears in the display, press **ACCEPT**
 If **2** does not appear in the display, enter **2** and press **ACCEPT**.
23. **Site ID: ...xxxx**
- | | |
|-------------------------|--------------------------|
| PHX1 (DURANGO) ...2001 | 35th Avenue |
| PHX2 (SALT67TH) ...2002 | 67th Avenue |
| PHX3 (SALT40TH) ...2003 | 40th Street / Salt River |
| PHX4 (IBW) ...2004 | 40th Street / IBW |
- If the correct ID appears in the display, press **ACCEPT**
 If the correct ID does not appear in the display, enter **xxxx** and press **ACCEPT**.
24. **Do You Wish to Access Advanced Sampling Features?: Yes**
 Press the button for **YES**.
25. **Use the DOWN arrow key to go to STORMWATER and press SELECT.**
26. **Storm Water: Enabled**
 If **Enabled** appears in the display, press **ACCEPT**
 If **Enabled** does not appear in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
27. **Storm Water Start Condition: Rain and Level**
 If **Rain and Level** appears in the display, press **ACCEPT**
 If **Rain and Level** does not appear in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
28. **Storm Water Rain Trigger: 0.05 inch**
 If **0.05 inch** appears in the display, press **ACCEPT**
 If **0.05 inch** does not appear in the display, enter **0.05** and press **ACCEPT**.
29. **Rainfall Time Interval: 1:00**
 If **1:00 (hr:min)** appears in the display, press **ACCEPT**
 If **1:00 (hr:min)** does not appear in the display, enter **100** and press **ACCEPT**.
30. **Storm Water Level Trigger: 0.5 inch**
 If **0.5 inch** appears in the display, press **ACCEPT**
 If **0.5 inch** does not appear in the display, enter **0.5** and press **ACCEPT**.
31. **First Flush Number of Bottles: 1**
 If **1** appears in the display, press **ACCEPT**
 If **1** does not appear in the display, enter **1** and press **ACCEPT**.

32. **First Flush: Samples to Collect: 1**
If **1** appears in the display, press **ACCEPT**
If **1** does not appear in the display, enter **1** and press **ACCEPT**.
33. **First Flush Interval 1: 0:05 (hr:min)**
If **0:05 (hr:min)** appears in the display, press **ACCEPT AS FINAL**
If **0:05 (hr:min)** does not appear in the display, enter **005** and press **ACCEPT AS FINAL**.
34. **First Flush Sample Volume: 100 mL**
If **100 mL** appears in the display, press **ACCEPT**
If **100 mL** does not appear in the display, enter **100** and press **ACCEPT**.
35. **Program Time Limit: Enabled**
If **Enabled** appears in the display, press **ACCEPT**
If **Disabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
36. **Storm Water Program Time Limit: 8:00 (SUMMER) 16:00 (WINTER)**
If **8:00/16:00 (hr:min)** appears in the display, press **ACCEPT**
If **8:00/16:00 (hr:min)** does not appear in the display, enter **800/1600** and press **ACCEPT**.
37. Press **MAIN MENU** button.
38. Press **OPTIONS** from the main menu.
39. Press **ADVANCED OPTIONS**.
40. Select **ALARMS** and press **SELECT**.
41. Scroll to **LOW MAIN BATTERY** using the down arrow key, and press **SELECT**.
42. **Low Main Battery Alarm Condition: Enabled**
If **Enabled** appears in the display, press **ACCEPT**.
If **Disabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
43. **Report Via Modem (be sure arrow is on in front of 'Report via modem')**.
If arrow is present, press **RETURN**.
If arrow is not present, press **SELECT**, and then press **RETURN**.
44. Scroll to **MEMORY BATTERY**.
45. **Memory Battery Alarm Condition: Enabled**
If **Enabled** appears in the display, press **ACCEPT**.
If **Disabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
46. **Report Via Modem (be sure arrow is on in front of 'Report via modem')**.
If arrow is present, press **RETURN**.
If arrow is not present, press **SELECT**, and then press **RETURN**.
47. Scroll to **RAINFALL** using the down arrow keys, and press **SELECT**.
48. **Rainfall Alarm Condition: Enabled**
If **Enabled** appears in the display, press **ACCEPT**
If **Disabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.

49. **Rainfall High Trigger Point: 0.05 inch**
If **0.05 inch** appears in the display, press **ACCEPT**
If **0.05 inch** does not appear in the display, enter **0.05** and press **ACCEPT**.
50. **Rainfall Time Interval: 1:00 (hr:min)**
If **1:00 (hr:min)** appears in the display, press **ACCEPT**
If **1:00 (hr:min)** does not appear in the display, enter **100** and press **ACCEPT**.
51. **Report Via Modem (be sure arrow is on in front of 'Report via modem')**.
If arrow is present, press **RETURN**.
If arrow is not present, press **SELECT**, and then press **RETURN**.
52. Press **RETURN**
53. Scroll to **CALIBRATION** if PT is to be calibrated.
54. Scroll to **COMMUNICATION SETUP** and press **SELECT**.
55. Scroll to **MODEM SETUP** and press **SELECT**.
56. **Modem Power: Enabled**
If **Enabled** appears in the display, press **ACCEPT**
If **Disabled** appears in the display, press **CHANGE CHOICE** until it appears and then press **ACCEPT**.
57. **Dial Method: Tone**
If **Tone** appears in the display, press **ACCEPT**
If **Pulse** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
58. **Phone Number: 4151084**
If **4151084** appears in the display, press **ACCEPT**
If **4151084** does not appear in the display, enter **4151084** and press **ACCEPT**.
59. **Cellular Modem Scheduling: Disabled**
If **Disabled** appears in the display, press **ACCEPT**.
If **Enabled** appears in the display, press **CHANGE CHOICE** until **Disabled** appears in the display, then press **ACCEPT**.
60. **Pager Option: Enabled**
If **Enabled** appears in the display, press **ACCEPT**.
If **Disabled** appears in the display, press **CHANGE CHOICE** until **Disabled** appears in the display, then press **ACCEPT**.
61. **Pager Service Phone Number: 591-6000**
If **5916000** appears in the display, press **ACCEPT**.
If not, enter **5916000**, and press **ACCEPT**.
62. **Number of Pagers:3**
Enter **3** in the display.
63. **Pager #1 Phone Number:**
Enter **190706**
64. **Pager #2 Phone Number:**
Enter: **190703**
65. **Pager #3 Phone Number:**
Enter: **190791**

66. **Reporting Order: Pager Only**
If **Pager Only** is in the display, press **ACCEPT**.
If **Pager Only** is not in the display, press **CHANGE CHOICE** until **Pager Only** appears in the display, then press **ACCEPT**.
67. Scroll to **RS-232** setup and press **SELECT**.
68. **RS-232 Baud Rate:9600**
If **9600** appears in the display, press **SELECT**
If **9600** does not appear in the display, enter **9600** and press **ACCEPT**.
69. Press **RETURN**
70. Scroll to **DATA LOG** and press **SELECT**.
71. Scroll to **SELECT INPUTS** and press **SELECT**.
72. Scroll to **RAINFALL** and press **SELECT**.
73. **Rainfall Input Data: Logged**
If **Logged** appears in the display, press **SELECT**
If **Logged** does not appear in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
74. **Rainfall Logging Interval: 1 min**
If **1 min** appears in the display, press **ACCEPT**
If **1 min** does not appear in the display, enter **1** and press **CHANGE CHOICE** until minutes appears in the display, then press **ACCEPT**.
75. Scroll to **LEVEL/FLOW** and press **SELECT**.
76. **Level/Flow Input Data: Logged**
If **Logged** appears in the display, press **SELECT**
If **Logged** does not appear in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
77. **Level/Flow Logging Interval: 1 min**
If **1 min** appears in the display, press **ACCEPT**
If **1 min** does not appear in the display, enter **1** and press **CHANGE CHOICE** until minutes appears in the display, then press **ACCEPT**.
78. Press **RETURN**.
79. Scroll to **EXTENDED POWER MODE** and press **SELECT**.
80. **Extended Power Mode: Disabled**
If **Disabled** appears in the display, press **ACCEPT**
If **Enabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
81. Press **RETURN**.
82. Scroll to **SET MEMORY MODE** and press **SELECT**.
83. **Memory Mode: Wrap**
If **Wrap** appears in the display, press **ACCEPT**
If **Wrap** does not appear in the display, press **CHANGE CHOICE** until it appears then press **ACCEPT**.
84. Press **RETURN**.
85. Scroll to **FLOW METER SETUP** and press **SELECT**.

86. **Flow Units: cfs**
 If **cfs** appears in the display, press **ACCEPT**
 If **cfs** does not appear in the display, press **CHANGE CHOICE** until it appears then press **ACCEPT**.
87. **Level Units: in**
 If **in** appears in the display, press **ACCEPT**
 If **in** does not appear in the display, press **CHANGE CHOICE** until it appears then press **ACCEPT**.
88. **Primary Device: Manning Equation**
 If **Manning Equation** appears in the display, press **ACCEPT**
 If **Manning Equation** does not appear in the display, press **CHANGE CHOICE** until it appears then press **ACCEPT**.
89. **Shape: Circular Pipe**
 If **Circular Pipe** appears in the display, press **ACCEPT**
 If **Circular Pipe** does not appear in the display, press **CHANGE CHOICE** until it appears then press **ACCEPT**.
90. **Pipe Diameter:**
- | | |
|------|---------|
| PHX1 | 75-inch |
| PHX2 | 96-inch |
| PHX3 | 54-inch |
| PHX4 | 66-inch |
- If the value in the display is correct, press **ACCEPT**
 If the value in the display is incorrect, enter the correct value (**75, 96, 54, 66**), and press **SELECT**.
91. **Pipe Slope:**
- | | |
|------|--------|
| PHX1 | 0.0009 |
| PHX2 | 0.0024 |
| PHX3 | 0.0029 |
| PHX4 | 0.0032 |
- If the value in the display is correct, press **ACCEPT**
 If the value in the display is incorrect, enter the correct value (**0.0009, 0.0023, etc.**), and press **ACCEPT**.
92. **Pipe Roughness: PHX1: 0.015, PHX2: 0.022, PHX3: 0.020, PHX4: 0.020**
 If **xxxx** appears in the display, press **SELECT**
 If **xxxx** does not appear in the display, enter **xxxx** and press **ACCEPT**.
93. **Total Flow Units: cf**
 If **cf** appears in the display, press **SELECT**
 If **cf** does not appear in the display, press **CHANGE CHOICE** until it appears and press **ACCEPT**.
94. Press **RETURN**.
95. Scroll to **FLOW TOTALIZER**, and press **SELECT**.
96. Scroll to **MODIFY SETUP**, and press **SELECT**.

97. **Totalizer Scaling:** **x 1**
If **x 1** appears in the display, press **ACCEPT**
If **x 1** does not appear in the display, press **CHANGE CHOICE** until it appears, and then press **ACCEPT**.
98. **Total Flow Units:** **cf**
If **cf** appears in the display, press **ACCEPT**
If **cf** does not appear in the display, press **CHANGE CHOICE** until it appears, and then press **ACCEPT**.
99. Press **RETURN**.
100. Press **RETURN**.
101. Press **MAIN MENU**.
102. Ready to Start, press **RUN/STOP** to begin sampling.

Glendale (900MAX series)
Sigma Stormwater Sampler Program

Some Basic Program Notes:

To start sampling: press the **RUN/STOP** key and follow the directions.

To see the current status, Press the **STATUS** key from the **MAIN MENU**.

The **MAIN MENU** key can be pressed at any time to return to that point.

The **password** is **9000**.

To look at data, press **DISPLAY DATA** from the **MAIN MENU** and follow prompts.

1. Press the **MAIN MENU** key.
2. Press the **SETUP** key at the upper right side of the display.
3. Press the **MODIFY ALL ITEMS** key at the upper right side of the display.
4. **Number of bottles: 8**
if **8** is displayed, press **ACCEPT**
if **8** is not displayed, press **CHANGE CHOICE** until **8** appears, then press **ACCEPT**.
5. **Bottle Volume: 1900 mL**
if **1900 mL** is displayed, press **ACCEPT**
if **1900 mL** not displayed,
Press **CHANGE UNITS** to change to **mL AND**
Enter **1900** and press **ACCEPT**.
6. **Intake Tubing Length:**

CITRUS	40 ft
ARROW	65 ft
INDPARK	26 ft
BUTLER	63 ft

if the correct value is displayed, press **ACCEPT**
if the correct value is not displayed, enter the correct value and press **ACCEPT**.
7. **Intake Tubing Type: 3/8" vinyl (tubing is actually Teflon)**
if **3/8" Vinyl** is displayed, press **ACCEPT**
if **3/8" Vinyl** is not displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.
8. **Program Lock: Disabled**
if **disabled** is displayed, press **ACCEPT**
if **disabled** is displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.

9. **Program Delay: Disabled**
if **disabled** is displayed, press **ACCEPT**
if **enabled** is displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.
10. **Sample Collection: Flow Proportional**
if **flow proportional** is displayed, press **ACCEPT**
if **flow proportional** is not displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.
11. **Flow Pacing Mode: CONST VOL/VAR TIME**
if **Const Vol/Var Time** is displayed, press **ACCEPT**
if **Const Vol/Var Time** is not displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.
12. **Flow Meter: Integral**
if **integral** is displayed, press **ACCEPT**
if **integral** is not displayed, press **CHANGE CHOICE** until it appears, then press the **ACCEPT** button.
13. **Take Sample Every: (CITRUS: 600 cf, ARROW: 1800 cf, INDPARK: 400 cf, BUTLER: 100 cf)**
if **xxxx cf** appears in the display, press **ACCEPT**
if **xxxx cf** does not appear in the display,
press **CHANGE UNITS** to get **CF, AND**
enter **xxxx** and press **ACCEPT**.
14. **Timed Override?: Disabled**
if **disabled** appears in the display, press **ACCEPT**
if **enabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
15. **Take First Sample: Immediately**
if **immediately** appears in the display, press **ACCEPT**
if **immediately** does not appear in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
16. **Deliver Each Sample To All Bottles?: No**
If **no** appears in the display, press **ACCEPT**
If **yes** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
17. **Choose a Method of Distribution: Samples/Bottle**
If **Samples/Bottle** appears in the display, press **ACCEPT**.
If **Bottles/Sample** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
18. **Samples/Bottle: 4**
If **4** appears in the display, press **ACCEPT**.
If **4** does not appear in the display, enter **4** and press **ACCEPT**.

19. **Liquid Sensors: Enabled**
 If **enabled** appears in the display, press **ACCEPT**
 If **disabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
20. **Sample Volume: 450 mL**
 If **450 mL** appears in the display, press **ACCEPT**
 If **450 mL** does not appear in the display, enter **450** and press **ACCEPT**.
21. **Intake Rinses: 2**
 If **2** appears in the display, press **ACCEPT**
 If **2** does not appear in the display, enter **2** and press **ACCEPT**.
22. **Sample Retries: 2**
 If **2** appears in the display, press **ACCEPT**
 If **2** does not appear in the display, enter **2** and press **ACCEPT**.
23. **Site ID: ...xxxx**
 CITRUS ...3001
 ARROW ...3002
 INDPARK ...3003
 BUTLER ...3004
 If the correct ID appears in the display, press **ACCEPT**
 If the correct ID does not appear in the display, enter **xxxx** and press **ACCEPT**.
24. **Do You Wish to Access Advanced Sampling Features?: Yes**
 Press the button for **YES**.
25. **Use the DOWN arrow key to go to STORMWATER and press SELECT.**
26. **Storm Water: Enabled**
 If **Enabled** appears in the display, press **ACCEPT**
 If **Enabled** does not appear in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
27. **Storm Water Start Condition: Rain and Level**
 If **Rain and Level** appears in the display, press **ACCEPT**
 If **Rain and Level** does not appear in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
28. **Storm Water Rain Trigger: 0.05 inch**
 If **0.05 inch** appears in the display, press **ACCEPT**
 If **0.05 inch** does not appear in the display, enter **0.05** and press **ACCEPT**.
29. **Rainfall Time Interval: 1:00**
 If **1:00 (hr:min)** appears in the display, press **ACCEPT**
 If **1:00 (hr:min)** does not appear in the display, enter **100** and press **ACCEPT**.
30. **Storm Water Level Trigger: 0.5 inch**
 If **0.5 inch** appears in the display, press **ACCEPT**
 If **0.5 inch** does not appear in the display, enter **0.5** and press **ACCEPT**.
31. **First Flush Number of Bottles: 1**
 If **1** appears in the display, press **ACCEPT**
 If **1** does not appear in the display, enter **1** and press **ACCEPT**.

32. **First Flush: Samples to Collect: 1**
If **1** appears in the display, press **ACCEPT**
If **1** does not appear in the display, enter **1** and press **ACCEPT**.
33. **First Flush Interval 1: 0:05 (hr:min)**
If **0:05 (hr:min)** appears in the display, press **ACCEPT AS FINAL**
If **0:05 (hr:min)** does not appear in the display, enter **005** and press **ACCEPT AS FINAL**.
34. **First Flush Sample Volume: 100 mL**
If **100 mL** appears in the display, press **ACCEPT**
If **100 mL** does not appear in the display, enter **100** and press **ACCEPT**.
35. **Program Time Limit: Enabled**
If **Enabled** appears in the display, press **ACCEPT**
If **Disabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
36. **Storm Water Program Time Limit: 8:00 (SUMMER) 16:00 (WINTER)**
If **8:00/16:00 (hr:min)** appears in the display, press **ACCEPT**
If **8:00/16:00 (hr:min)** does not appear in the display, enter **800/1600** and press **ACCEPT**.
37. Press **MAIN MENU** button.
38. Press **OPTIONS** from the main menu.
39. Press **ADVANCED OPTIONS**.
40. Select **ALARMS** and press **SELECT**.
41. Scroll to **LOW MAIN BATTERY** using the down arrow key, and press **SELECT**.
42. **Low Main Battery Alarm Condition: Enabled**
If **Enabled** appears in the display, press **ACCEPT**.
If **Disabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
43. **Report Via Modem (be sure arrow is on in front of 'Report via modem')**.
If arrow is present, press **RETURN**.
If arrow is not present, press **SELECT**, and then press **RETURN**.
44. Scroll to **MEMORY BATTERY**.
45. **Memory Battery Alarm Condition: Enabled**
If **Enabled** appears in the display, press **ACCEPT**.
If **Disabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
46. **Report Via Modem (be sure arrow is on in front of 'Report via modem')**.
If arrow is present, press **RETURN**.
If arrow is not present, press **SELECT**, and then press **RETURN**.
47. Scroll to **RAINFALL** using the down arrow keys, and press **SELECT**.
48. **Rainfall Alarm Condition: Enabled**
If **Enabled** appears in the display, press **ACCEPT**
If **Disabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.

49. **Rainfall High Trigger Point: 0.05 inch**
If **0.05 inch** appears in the display, press **ACCEPT**
If **0.05 inch** does not appear in the display, enter **0.05** and press **ACCEPT**.
50. **Rainfall Time Interval: 1:00 (hr:min)**
If **1:00 (hr:min)** appears in the display, press **ACCEPT**
If **1:00 (hr:min)** does not appear in the display, enter **100** and press **ACCEPT**.
51. **Report Via Modem (be sure arrow is on in front of 'Report via modem').**
If arrow is present, press **RETURN**.
If arrow is not present, press **SELECT**, and then press **RETURN**.
52. Press **RETURN**
53. Scroll to **CALIBRATION** if PT is to be calibrated.
54. Scroll to **COMMUNICATION SETUP** and press **SELECT**.
55. Scroll to **MODEM SETUP** and press **SELECT**.
56. **Modem Power: Enabled**
If **Enabled** appears in the display, press **ACCEPT**
If **Disabled** appears in the display, press **CHANGE CHOICE** until it appears and then press **ACCEPT**.
57. **Dial Method: Tone**
If **Tone** appears in the display, press **ACCEPT**
If **Pulse** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
58. **Phone Number: 4151084**
If **4151084** appears in the display, press **ACCEPT**
If **4151084** does not appear in the display, enter **4151084** and press **ACCEPT**.
59. **Cellular Modem Scheduling: Disabled**
If **Disabled** appears in the display, press **ACCEPT**.
If **Enabled** appears in the display, press **CHANGE CHOICE** until **Disabled** appears in the display, then press **ACCEPT**.
60. **Pager Option: Enabled**
If **Enabled** appears in the display, press **ACCEPT**.
If **Disabled** appears in the display, press **CHANGE CHOICE** until **Disabled** appears in the display, then press **ACCEPT**.
61. **Pager Service Phone Number: 591-6000**
If **5916000** appears in the display, press **ACCEPT**.
If not, enter **5916000**, and press **ACCEPT**.
62. **Number of Pagers:3**
Enter **3** in the display.
63. **Pager #1 Phone Number:**
Enter **190706**
64. **Pager #2 Phone Number:**
Enter: **190703**
65. **Pager #3 Phone Number:**
Enter: **190791**

66. **Reporting Order: Pager Only**
If **Pager Only** is in the display, press **ACCEPT**.
If **Pager Only** is not in the display, press **CHANGE CHOICE** until **Pager Only** appears in the display, then press **ACCEPT**.
67. Scroll to **RS-232** setup and press **SELECT**.
68. **RS-232 Baud Rate:9600**
If **9600** appears in the display, press **SELECT**
If **9600** does not appear in the display, enter **9600** and press **ACCEPT**.
69. Press **RETURN**
70. Scroll to **DATA LOG** and press **SELECT**.
71. Scroll to **SELECT INPUTS** and press **SELECT**.
72. Scroll to **RAINFALL** and press **SELECT**.
73. **Rainfall Input Data: Logged**
If **Logged** appears in the display, press **SELECT**
If **Logged** does not appear in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
74. **Rainfall Logging Interval: 1 min**
If **1 min** appears in the display, press **ACCEPT**
If **1 min** does not appear in the display, enter **1** and press **CHANGE CHOICE** until minutes appears in the display, then press **ACCEPT**.
75. Scroll to **LEVEL/FLOW** and press **SELECT**.
76. **Level/Flow Input Data: Logged**
If **Logged** appears in the display, press **SELECT**
If **Logged** does not appear in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
77. **Level/Flow Logging Interval: 1 min**
If **1 min** appears in the display, press **ACCEPT**
If **1 min** does not appear in the display, enter **1** and press **CHANGE CHOICE** until minutes appears in the display, then press **ACCEPT**.
78. **Velocity Input Data: Logged**
If **Logged** appears in the display, press **SELECT**
If **Logged** does not appear in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.
79. **Velocity Logging Interval: 1 min**
If **1 min** appears in the display, press **ACCEPT**
If **1 min** does not appear in the display, enter **1** and press **CHANGE CHOICE** until minutes appears in the display, then press **ACCEPT**.
80. Press **RETURN**.
81. Scroll to **EXTENDED POWER MODE** and press **SELECT**.
82. **Extended Power Mode: Disabled**
If **Disabled** appears in the display, press **ACCEPT**
If **Enabled** appears in the display, press **CHANGE CHOICE** until it appears, then press **ACCEPT**.

83. Press **RETURN**.
84. Scroll to **SET MEMORY MODE** and press **SELECT**.
85. **Memory Mode: Wrap**
 If **Wrap** appears in the display, press **ACCEPT**
 If **Wrap** does not appear in the display, press **CHANGE CHOICE** until it appears then press **ACCEPT**.
86. Press **RETURN**.
87. Scroll to **FLOW METER SETUP** and press **SELECT**.
88. **Flow Units: cfs**
 If **cfs** appears in the display, press **ACCEPT**
 If **cfs** does not appear in the display, press **CHANGE CHOICE** until it appears then press **ACCEPT**.
89. **Level Units: in**
 If **in** appears in the display, press **ACCEPT**
 If **in** does not appear in the display, press **CHANGE CHOICE** until it appears then press **ACCEPT**.
90. **Primary Device: Area Velocity (For BUTLER choose HEAD vs FLOW)**
 If **Area Velocity** appears in the display, press **ACCEPT**
 If **Area Velocity** does not appear in the display, press **CHANGE CHOICE** until it appears then press **ACCEPT**.
91. **Calculations based on: Geometry**
 If **Geometry** appears in the display, press **ACCEPT**
 If **Geometry** does not appear in the display, press **CHANGE CHOICE** until it appears then press **ACCEPT**.
92. **Shape: Circular Pipe**
 If **Circular Pipe** appears in the display, press **ACCEPT**
 If **Circular Pipe** does not appear in the display, press **CHANGE CHOICE** until it appears then press **ACCEPT**.
93. **Pipe Diameter:**
 CITRUS 42-inch
 ARROW 96-inch
 INDPARK 54-inch
- If the value in the display is correct, press **ACCEPT**
 If the value in the display is incorrect, enter the correct value and press **SELECT**.
94. **FOR BUTLER SITE**
 Use Lookup Table 1

95. **Pipe/Channel Slope:**
CITRUS 0.0046
ARROW 0.0010
INDPARK 0.0033
If the value in the display is correct, press **ACCEPT**
If the value in the display is incorrect, enter the correct value (0.0009, 0.0023, etc.),
and press **ACCEPT**.
96. **Pipe Roughness: CITRUS: 0.018, ARROW: 0.020, INDPARK: 0.018, BUTLER:
0.015**
If xxxx appears in the display, press **SELECT**
If xxxx does not appear in the display, enter xxxx and press **ACCEPT**.
97. **Total Flow Units: cf**
If cf appears in the display, press **SELECT**
If cf does not appear in the display, press **CHANGE CHOICE** until it appears and
press **ACCEPT**.
98. Press **RETURN**.
99. Scroll to **FLOW TOTALIZER**, and press **SELECT**.
100. Scroll to **MODIFY SETUP**, and press **SELECT**.
101. **Totalizer Scaling: x 1**
If x 1 appears in the display, press **ACCEPT**
If x 1 does not appear in the display, press **CHANGE CHOICE** until it appears, and
then press **ACCEPT**.
102. **Total Flow Units: cf**
If cf appears in the display, press **ACCEPT**
If cf does not appear in the display, press **CHANGE CHOICE** until it appears, and
then press **ACCEPT**.
103. Press **RETURN**.
104. Press **RETURN**.
105. Press **MAIN MENU**.
106. Ready to Start, press **RUN/STOP** to begin sampling.