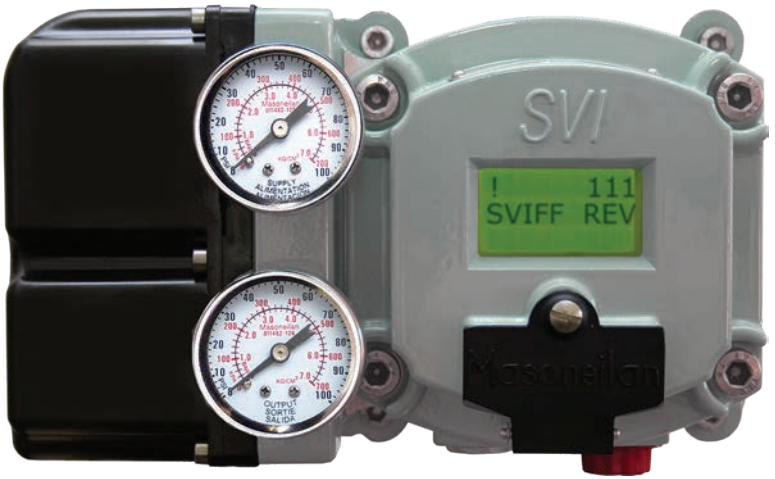
Masoneilan™
SVI™FF Digital Positioner

Quick Start Guide (Rev. G)



Baker Hughes

About this Guide

This Quick Start Guide applies to the SVI FF instrument and supported software:

- ☐ with Firmware version 1.0.0.1 or higher
- ☐ with *ValVue*™ version 3.0
- ☐ with handheld communicator with DD published for SVI FF

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In no case does this manual guarantee the merchantability of the positioner or the software or its adaptability to a specific client needs.

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The term "positioner" used throughout this manual refers to digital positioner.

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Document Changes

Version/Date	Changes
B/12-14	Updated headers and footers. Made a few changes to Quick Start sectionChanged ES-776 to Rev J.
C/02-15	Changed ES-776 to Rev. K and to Declaration ofConformity
D/03-17	Changed ES-776 to Rev. L.
E/02-20	Changed ES-776 to Rev. M. Rebranded to Baker Hughes formats.Added Product Numbering section. Added Determining Device Descriptor and FirmwareVersions AP Label section. Updated Mounting the SVI FF on Rotary Valvessection.
F/07-21	ES-776 instructions removed.
G/04-22	Added Appendix A : Customs Union Information

Table of Contents

Safety Information

This section provides safety information and defines the documentation symbols.

Safety Symbols

SVI FF instructions contain warnings, cautions and notes, where necessary, to alert you to safety related or other important information. Read the instructions carefully before installing and maintaining your instrument. Total compliance with all WARNING, and CAUTION notices is required for safe operation.

WARNING

Indicates a potentially hazardous situation, which if not avoided could result in serious injury or death.

CAUTION

Indicates a potentially hazardous situation, which if not avoided could result in instrument or property damage, or data loss.

NOTE

Indicates important facts and conditions.

SVI FF Product Safety

For SVI FF positioners intended for use with industrial compressed air:

Ensure that an adequate pressure relief provision is installed when the application of system supply pressure could cause peripheral equipment to malfunction. Installation must be in accordance with local and national compressed air and instrumentation codes.

Limit State Parameter - do not exceed maximum air pressure indicated on the nameplate, because personal injury and equipment malfunction could result.

General installation, maintenance or replacement

- Products must be installed in compliance with all local and national codes and standards by qualified personnel using safe site work practices. Personal Protective Equipment (PPE) must be used per safe site work practices.

- Ensure proper use of fall protection when working at heights, per safe site work practices. Use appropriate safety equipment and practices to prevent the dropping of tools or equipment during installation.

- Under normal operation, compressed supply gas is vented from the SVI FF to the surrounding area, and may require additional precautions or specialized installations.

Intrinsically Safe Installation

Products certified as explosion proof or flame proof equipment or for use in intrinsically safe installations **MUST BE**:

- Installed, put into service, used and maintained in compliance with national and local regulations and in accordance with the recommendations contained in the relevant standards concerning those environments.

- Used only in situations that comply with the certification conditions shown in this document and after verification of their compatibility with the zone of intended use and the permitted maximum ambient temperature.

- Installed, put into service and maintained by qualified and competent professionals who have undergone suitable training for instrumentation used in such areas.

WARNING *Before using these products with fluids/compressed gases other than air or for non-industrial applications,consult the factory. This product is not intended for use in life support systems.*

WARNING *Under certain operating conditions, the use of damaged instruments could cause a degradation of the performance of the system which may lead to personal injury or death.*

WARNING *Installation in poorly ventilated confined areas, with any potential of gases other than oxygen being present, can lead to a risk of personnel asphyxiation.*

Use only genuine replacement parts which are provided by themanufacturer, to guarantee that the products comply with the essential safety requirements of the European Directives.

Changes to specifications, structure, and components usedmay not lead to the revision of this manual unless such changes affect the function and performance of the product.

Masoneilan Help Contacts

- Email: svisupport@bakerhughes.com
- Phone: 888-SVI-LINE (888-784-5463)

Product Numbering

Refer to Masoneilan SVI FF Safe Use instructions ES-776 available in:

valves.bakerhughes.com/resource-center

Determining Device Descriptor and Firmware Versions AP Label

It is useful to track the version of the Device Descriptor (DD) and firmware version in use on your DCS and positioner respectively. This is of value in troubleshooting system issues that can arise when initially installing and later upgrading Masoneilan and non-Masoneilan system components. There are several different ways to access the required information.

Figure 1 shows the unit tag that comes attached to the unit.

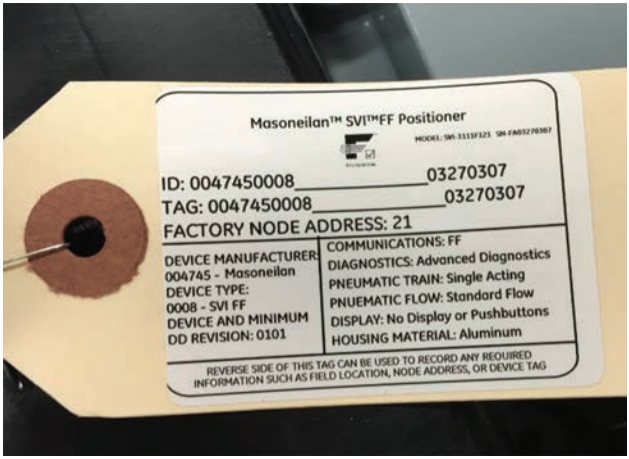


Figure 1 - Unit Tag

The tag lists the following items:

☐ ID: Unique factory-set identifier for the device.	☐ Tag: User-defined. This can be changed for the specific application.
☐ Factory Node Address: Lists the factory-set field bus node address.	☐ Device Manufacturer: The six digits comprise the first part of the ID and Tag. Used to identify the DD.
☐ Device Type: A four digit code.	☐ Device and Minimum DD Revision: Represents the original firmware revision flashed during manufacture. This DD may have been upgraded since installation.
☐ Communications: Lists the protocol in use.	☐ Diagnostics: Lists the level of diagnostics with which the device was shipped. This may have been upgraded since installation.
☐ Pneumatic Train: Single Acting or Double Acting.	☐ Pneumatic Flow: Standard Flow or High Flow.
☐ Display: Indicates whether the LED display and pushbuttons are installed.	☐ Housing: Aluminum only.

The actual device ID in this case is constructed according to the following formula:

- ☐ 004745 – which is the manufacturer identifier for Masoneilan
- ☐ 0008 – which is the device type for SVI FF positioner
- ☐ _____ - 14 underscore characters
- ☐ XXXXXXXX – the eight number string for the device part number as shown in the picture below (first two letters are ignored)
- ☐ From the Live List information presented in the DCS or in the Communication DTM (Figure 2).

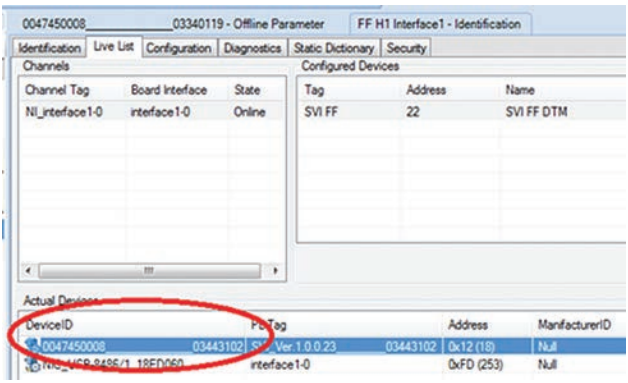


Figure 2 - Device ID: Live List

- From the DTM, when open in connected mode (note: some hosts may not support this feature):

Figure 3 - Device ID: DTM

Firmware versions can also be viewed using the:

- SVI FF DTM on the Positioner tab. The firmware revision is Software Revision (Figure 4). Where the first digit, *here 1*, represents the *DD Revision*.

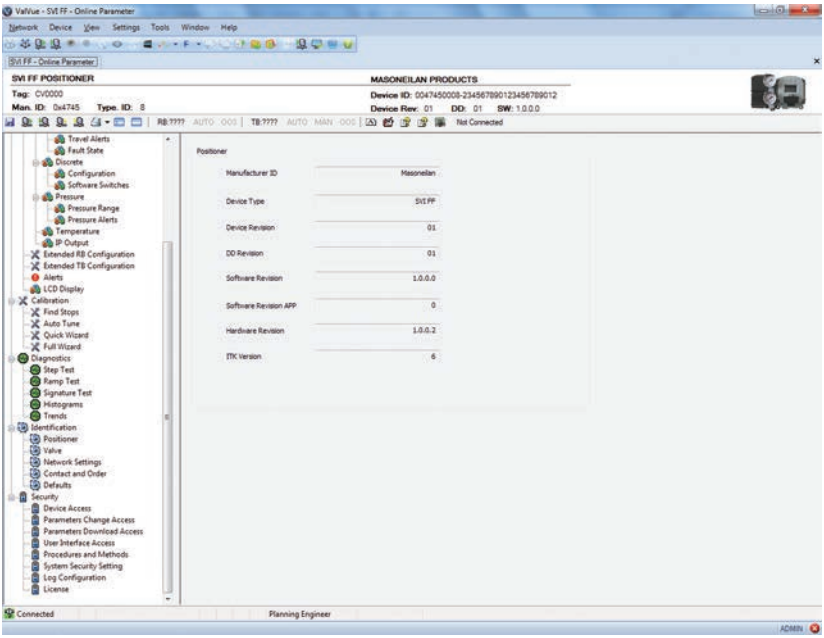


Figure 4 - Positioner Tab

- By creating/printing the SVI FF Configuration Report by:
  1. Selecting **View** > **Network View** > **Topology Pane**.
  2. Selecting the positioner, right-clicking and selecting **Additional Functions** > **Report**.

- Handheld by selecting **Online** > **SVI FF Device** > **Resource Block** > **Device** > **Identification**.

Installation and Set Up

The steps necessary to complete the SVI FF installation and software setup are outlined in Table 1.

Table 1 - SVI FF Installation Steps

Step No.	Procedure
1	Attach mounting bracket to the actuator.
2	Install the SVI FF magnetic assembly (rotary valves only).
3	Assemble the SVI FF on the bracket that is mounted to the valve actuator.
4	Connect the pneumatic tubing to the SVI FF.
5	Connect the air supply to the SVI FF.
6	Connect the positioner to the H1 segment by installing the SVI FF wiring.
7	Configure/calibrate using ValVue, the SVI FF DTM or a handheld using the DD. See ***Example Configuration*** on page 18 for a general example.

WARNING

Failure to adhere to the requirements listed may cause loss of life and property.

Before installing, using, or carrying out any maintenance tasks associated with this instrument, ***READ ALL THE INSTRUCTIONS CAREFULLY****.*

Pushbuttons and Local Display

Pushbuttons

The local pushbuttons are located behind a hinged cover, directly below the display window. To open the cover loosen the screw and swing the cover down. Always re-fasten the cover after use to protect the pushbuttons from environmental contamination. The pushbuttons perform the following:

- ☐ Left Button - Marked with *, permits you to select or accept the value or parameter option currently displayed.
- ☐ Middle Button - Marked –, permits you to move back through the menu structure to the previous item in the menu or decrement the value currently shown in the digital display. When used to decrease a displayed value, holding the button down causes the value to decrease at a faster rate.
- ☐ Right Button - Marked +, permits you to move forward through the menu structure to the next item in the menu, or to increment the value currently shown in the digital display. When used to increase a displayed value, holding this button down causes the value to increase at a faster rate.

CAUTION

The display is limited to values between 0 and 100. Therefore, the display may show a value for the actual setpoint that is not valid if the setpoint is above 100 or below 0.

NOTE

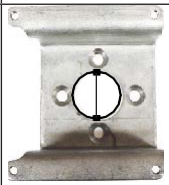
When an exclamation point (!) appears in the SVI FF display window, it indicates that there is instrument status available.

Mounting the SVI FF on Rotary Valves

Travel Sensor Alignment

Table 2 shows the general guidelines for travel sensor alignment. Review the table prior to installing the SVI FF on a rotary valve actuator for proper alignment of the magnet. Alignment is required for proper Hall sensor operation.

Table 2 - Travel Sensor Alignment

Rotary Mounting System	Stroke Direction (An accumulated value of 100% travel = 1 stroke. The travel does not need to occur in one movement):	Magnet Orientation	Valve Position	Sensor Counts (TB: RAW_POSITION)
Rotary	<60° Rotation Clockwise or counterclockwise rotation	 (0°)	Closed(0%)	0 +/- 1000
	>60° Rotation Clockwise with increasing setpoint	 (-45°)	Full Open or Full Closed	-8000 +/- 1500 or +8000 +/- 1500
	>60° Rotation Counter Clockwise rotation with increasing setpoint	 (+45°)	Full Open or Full Closed	-8000 +/- 1500 or +8000 +/- 1500
General Rule for other configurations	Any amount of rotation Clockwise or counterclockwise	 (0°)	50% Travel (Mid-Stroke)	0 +/- 1000

Mounting the SVI FF on Reciprocating Valves

Table 3 - Reciprocating Valve Mounting Hole and Turnbuckle Length

Actuator Size Masoneilan	Stroke	Mounting Hole	Lever Hole	Turnbuckle Length
6 and 10	0.5 - 0.8” (12.7 - 20.32 mm)	A	A	1.25” (31.75 mm)
10	0.5 - 0.8” (12.7 - 20.32 mm)	A	A	1.25” (31.75 mm)
10	>0.8 – 1.5” (20.32 - 41.5 mm)	B	B	1.25” (31.75 mm)
16	0.5 - 0.8” (12.7 - 20.32 mm)	B	A	2.90” (73.66 mm)
16	>0.8 – 1.5” (20.32 - 41.5 mm)	C	B	2.90” (73.66 mm)
16	>1.5 – 2.5” (41.5 - 63.5 mm)	D	C	2.90” (73.66 mm)
23	0.5 - 0.8” (12.7 - 20.32 mm)	B	A	5.25” (133.35 mm)
23	>0.8 – 1.5” (20.32 - 41.5 mm)	C	B	5.25” (133.35 mm)
23	>1.5 – 2.5” (41.5 - 63.5 mm)	D	C	5.25” (133.35 mm)

Wiring the SVI FF

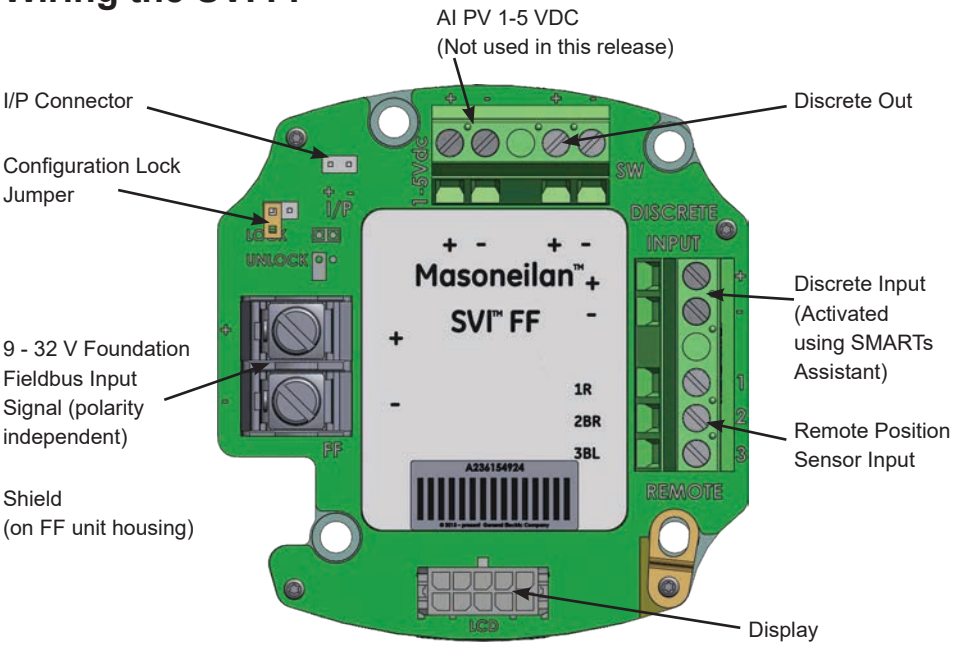


Figure 5 - Connections to Electronics Module (via Terminal Board)

FF Environment Minimum Settings

The general steps necessary to complete the SVI FF configuration and software setup are outlined in Figure 6.

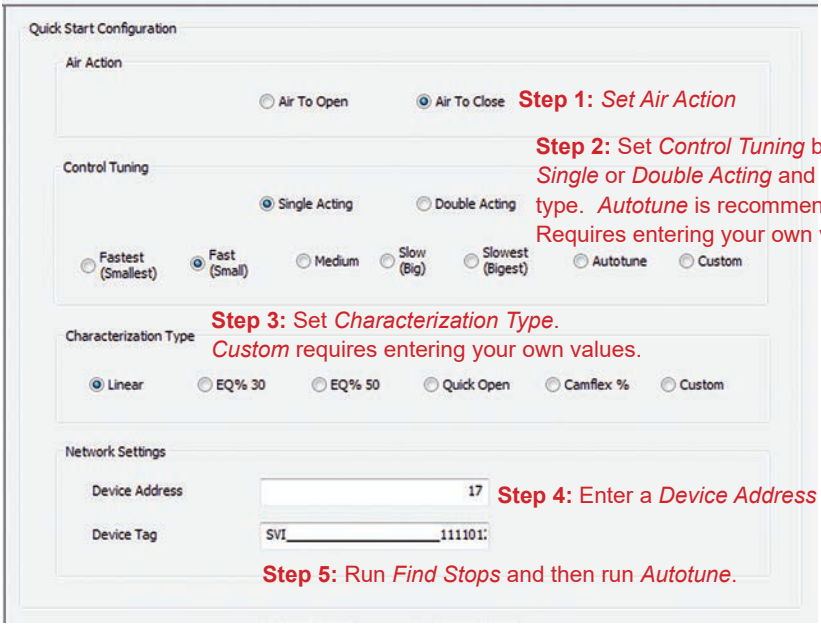


Figure 6 - Quick Start Configuration

Example Configuration

Step 1: Install the Positioner on the Valve

See ***Installation and Set Up*** on page 12.

Step 2: Set Tag and Address

Using NI Configurator:

1. Import DD/CFF files.

CAUTION

Do not navigate to the NI DD folder and copy the DD file onto itself.

2. Right-click on the device, select **Set Tag**, follow the prompts to enter a Tag.
3. Click **Set**.

CAUTION

Do not deactivate the Set to OOS mode check-box. The block must be in OOS to change the Tag.

4. Right-click on the device, select **Set Address**, follow the prompts to enter an Address.

CAUTION

If the device is at the temporary address range (248 (0xF8)- 251 (OxFB)), you must set the address outside of that range.

5. Click **Set**.

CAUTION

Do not deactivate the Set to OOS mode check-box. The block must be in OOS to change the Address.

Step 3: Basic Configuration

This section serves as an example where the AO block and TB block are configured. However, there are a number of combinations that can be configured. This discussion is valid if the positioner is controlled by the AO block.

1. **For the Transducer block set:**

   ☐ ACTUATOR_3.ACT_FAIL_ACTION_1 = either 1. Valve Closed (most common) or 2. Valve Open

   ☐ ACCESSORY.REMOTE_SENSOR = 0, if remote sensor is not in use (internal Hall sensor is used)

   ☐ ACTIVATE_CONTROL_SET to one of:

☐ *0*: Activate Custom Control Set (required for Autotune as well - most common)	☐ *1*: Activate Control Set 1 (Slowest)	☐ *2*: Activate Control Set 2
☐ *3*: Activate Control Set 3	☐ *4*: Activate Control Set 4	☐ *5*: Activate Control Set 5 (Fastest)
☐ *6:* Activate Control Set 6 (Double Acting - Slow)	☐ *7*: Activate Control Set 7 (Double Acting- Fast)	

   ☐ CHAR_SELECTION.TYPE to one of:

☐ *0*. Linear (most common)	☐ *1*. Equal Percentage (30:1)	☐ *2*. Equal Percentage (50:1)
☐ *3*. Quick Open (reversal from Equal Percentage (50:1))	☐ *4*. Custom	☐ *5*. *Camflex*™ Percentage

   See Transducer Block Parameters in the SVI FF instruction manual for further settings.

2. **For the AO block review/set as below:**

☐ PV_SCALE.UNIT INDEX = *%*	☐ XD_SCALE.UNIT INDEX = *%*	☐ CHANNEL = *Position*
☐ SHED_OPT = *NORMAL SHED NORMAL RETURN*		

Step 4: Run Find Stops METHOD

Use a configuration tool (DD, SVI FF local pushbuttons or software) to run METHOD.

Step 5: Run Auto Tune METHOD

Use a configuration tool (DD, SVI FF local pushbuttons or software) to run METHOD.

Downloads

To download the complete user manual, DD, SVI FF Advanced DTM and the ValVue Suite trial program, visit:

https://valves.bakerhughes.com/resource-center.

Hazardous Location Installation

WARNING

Refer to ES-776 Safe Use Instructions for installing Masoneilan SVI FF in areas where there is a potential risk for explosive gas atmosphere or inflammable dust.

ES-776 instructions are available in several languages on: valves.bakerhughes.com/resource-cente

Appendix A : Customs Union Information

MARKING

Dresser LLC.

0Ex ia IIC T6..T4 Ga X	{Intrinsically Safe, gas}
Ex ia IIIC T96°C Da X	{Intrinsically Safe, dust}
1Ex db mb IIC T6..T4 Gb X	{Flameproof/Encapsulation, gas}
Ex tb IIIC T96°C Db X	{Protection by Enclosure, dust}
2Ex ic IIC T6..T4 Gc X	{Intrinsically Safe, gas}
Ex tc IIIC T96°C Dc X	{Protection by Enclosure, dust

See instructions ES-776 for all entity parameters

PROTECTION, STORAGE, HANDLING, DISPOSAL

Valves have been tested and adjusted at the factory prior to shipment. The period between leaving the manufacturing plant to installation may involve substantial exposure to degradation due to impact, impingement or corrosion. Such degradation can adversely affect the performance of valves when in service and can easily be avoided if simple guidelines are followed.

Protection

As a minimum, all positioners are dried, coated and fitted with protective measures, such as positional air connection protection and boxed for protection during shipment when shipped as individual positioner, or waterproof wrapping if installed on valve package, prior to shipment. This protection should be left in place until immediately before the positioner is to be fitted onto an assembly.

Storage and Preservation

If the SVI FF is stored for a long duration, you must keep the housing sealed against weather, fluids, particles, and insects. To prevent damage to the SVI FF:

- Use the plugs provided with shipment to plug the ¼ NPT air connections, on the positioner and on the air filter regulator set.
- Do not allow standing water to accumulate.
- Observe storage temperature requirements

Transportation and Handling

Appropriate care when handling the SVI FF should be given, roughness in handling may damage air filter and NPT connection. Care should be taken to avoid damage to any protection. Exercise care when unpacking the control valve and its mounted accessories.

Disposal

Follow instructions carefully on product labels for use and storage to prevent any accidents.

Be sure to read product labels for disposal instructions to reduce the risk of products exploding, igniting, leaking, mixing with other chemicals or posing other hazards on the way to a disposal facility.

Never store hazardous products in food containers; keep them in their original containers and never remove labels. Corroding containers, however, require special handling. Call your local hazardous materials official or fire department for instructions.

Check with your local environmental, health or solid waste agency for more information on waste management options.

Authorized Contacts

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