GUAM WATERWORKS AUTHORITY	STANDARD OPERATING PROCEDURE	No.	SOP-1500-WWC-002
	CCTV Sewer Line Inspection	Effective Date	3/31/2025
		Final Approver	Miguel C. Bordallo, P.E. General Manager
		Revision Letter	A

1.0 Purpose

This Standard Operating Procedure (SOP) establishes guidelines and procedures for Closed Circuit Television (CCTV) sewer line inspection.

2.0 Scope

This SOP applies to all Guam Waterworks Authority (GWA) employees under the Wastewater Collection section who are involved in the planning, execution, and analysis of CCTV sewer line inspections.

3.0 Policy

In order to monitor the sewer infrastructure effectively and efficiently, GWA needs to identify potential issues and address maintenance needs proactively. This requires a structured process that involves inspecting 60 miles of the 300-mile collection system each year, with inspection intervals of 5 years for the entire system.

Only trained operators certified by the National Association of Sewer Service Companies (NASSCO) in accordance with its Pipeline Assessment Certification Program (PACP) standards are authorized to conduct these inspections.

4.0 Definitions

4.1. **Cable Guide:** Guide at the manhole that protects the data cable from wear and fraying against the sharp edge of the pipe crown and manhole lip while conducting CCTV inspections.

4.2. **Camera:** A camera that is specially designed, compact, and manipulable; remotely controlled (CCTV) video camera used to inspect sewer lines.

4.3. **Closed Circuit Television (CCTV):** The use of a video camera to inspect sewer lines for structural integrity and pipe conditions such as damage or obstruction.

4.4. **Combination Sewer Cleaning Truck (Combination Truck):** A sewer cleaning machine capable of flushing and vacuuming debris.

4.5. **Geographic Information System (GIS):** A mapping system that collects, manages, and analyzes spatial data using location-based information. It is a computer system used to create maps and visual representations for capturing, storing, checking, and displaying data related to positions on the Earth's surface.

4.6. **High-Velocity Jetter:** A machine designed to remove grease, roots, and debris from wastewater collection sewer lines and clean them with high-velocity jets of water. Also referred to as a jetter, hydraulic cleaner, hydro jet, flusher, and jet truck[1].

[1] high-velocity cleaner (HVC) (csus.edu)

4.7. **Inflow and Infiltration (I/I):** Inflow of rainwater entering the sewer system through improper connections (e.g., downspouts or drainage system). Infiltration is groundwater entering the sewer system through holes in the sewers or unsealed manholes.

4.8. **Multi-Conductor Cables:** The data cable between the CCTV camera/transporter and inspection computer that transmits video and motor control signals in separate, independent cables.

4.9. **National Association of Sewer Service Companies (NASSCO):** A not-for-profit trade organization that provides quality education and training on pipeline condition assessment and inspection.

4.10. **Operators:** Personnel from GWA's Court Order Unit who conduct sewer line cleaning and perform CCTV inspections.

4.11. **Pig Tail:** An intermediary cable that connects the data cable to the CCTV camera.

4.12. **Pipeline Assessment Certification Program (PACP):** A standardized system for coding sewer pipe inspection footage developed by NASSCO.

4.13. **Sanitary Sewer Overflow (SSO):** Any overflow, spill, release, or diversion of wastewater from a sanitary sewer collection system that occurs before a treatment plant. Sanitary sewer overflows include a) overflows or releases of wastewater that reach waters of the US, b) overflows or releases of wastewater that do not reach waters of the US, and c) wastewater backups into buildings or private property that are caused by blockages or flow conditions in a sanitary sewer system or building sewer lateral. SSOs are generally caused by high volumes of I/I pipe blockages, pipe breaks, power failure, and insufficient system capacity.

4.14. **Sewer Line Rapid Assessment Tool (SL RAT):** Portable onsite assessment tool that utilizes acoustic technology to quickly detect blockage conditions in gravity fed sewers.

4.15. **Sewer Main Line (SML):** A pipe that carries wastewater from residential or commercial properties to the wastewater treatment plants through a gravity main line.

4.16. **Sewer Manhole (SMH):** The surface-level access point for a below-ground sewer piping system. It is designed for the entry of cleaning equipment and personnel to conduct sewer maintenance on underground sewer piping.

4.17. **Single Conductor Cables:** The data cable between the CCTV camera/transporter and inspection computer that transmits video and motor control signals in one singular, common cable.

4.18. **Tiger Tail:** Protective sleeve that guards the high-pressure water hose from damage due to rubbing against the rims of manholes or other entry points.

4.19. **Transporter:** Wheeled or tracked, remotely controlled transport system that transports the CCTV camera through the sewer line.

4.20. **Water Wastewater System Control Center (SCC):** GWA's primary control/communications hub connecting field personnel and system operators with Operations Supervisors or Managers and executive management. SCC Dispatchers send and receive data to and from field personnel/operators providing critical asset information, additional support, or equipment needed. SCC is also responsible for documenting all transactions between SCC, the relevant Operations Supervisor or Manager, and the responding field personnel/operators.

5.0 Roles and Responsibilities

5.1.	General Manager	Approves this SOP and all its subsequent changes. Approves the assignments of GWA official vehicles to each division. Reviews monthly reports submitted by the Manager.
5.2.	Assistant General Manager for Operations (AGM-O)	Oversees the development, revision, and implementation of this SOP as the Policy Owner. Reviews monthly reports submitted by the Manager.
5.3.	Operations & Maintenance (O&M) Manager, Wastewater Collections	Reviews this SOP annually and makes necessary changes to be presented to the AGM-O for consideration. Ensures that proper training and/or training guidelines are provided to the affected employees to ensure proper compliance with this SOP. Reviews and submits the monthly report to the AGM-O and GM.
5.4.	Pump Station (PS) Supervisor	Monitors personnel to ensure compliance with this SOP and provides guidance if needed. Gathers information on the GIS to identify all SMHs that require inspection. Creates daily and weekly inspection schedules for the Court Order Unit (COU). Notifies Dispatch 48 hours before planned road closures. When debris or obstructions are encountered, contacts the COU crew assigned to the Jetter to re-flush the SML and pump out the debris. When damages or defects are confirmed, sends the marked location, video footage, GIS map location, and PACP report to the Maintenance Supervisor to create a work order for the repair(s). Reviews PACP reports submitted by Operators and verifies identified errors between the GIS mapping information and field data. If any errors or discrepancies are found, submits the PACP report to the GIS Manager for data correction before the end of shift. Submits a report to the O&M Manager at the end of every month. Submits a report to Compliance & Safety at the end of every quarter.

5.5.	Operators	Adhere to the provisions of this SOP. Contact the Division Manager or authorized representative when confronted by a situation not covered by this SOP or requiring clarification.

6.0 Procedure Description

6.1. **General Preparation:**

6.1.1. **Data Collection:** The Pump Station Supervisor (PS Supervisor) gathers sewer system information and mapping using the GIS to locate sewer manholes (SMH) and sewer main lines (SML). The Court Order Unit (COU) Operators may observe deviations from the information provided; therefore, they must obtain accurate data using the Granite Net software.

6.1.2. **CCTV Inspection Schedule:** The PS Supervisor will review the data collected to determine which manholes have not been inspected and create the daily and weekly inspection schedules for the COU.

6.1.3. **COU Team Structure:** The COU is divided into two teams; however, operators are expected to remain flexible and ready to assist within this section whenever needed. Each team requires three (3) to four (4) operators for CCTV inspections.

6.1.3.1. One operator will handle the CCTV controls.

6.1.3.2. One operator will manage traffic control measures.

6.1.3.3. Two operators will guide the camera down from the SMH.

6.1.4. **Road Closures:** If a road closure is required, the PS Supervisor must notify the Trouble Dispatch Center (Dispatch) via email or text message to request a Road Closure Notice forty-eight (48) hours before the planned closure[2].

6.1.5. **CCTV Equipment and Supplies:** The COU must ensure that the *CCTV Equipment and Supplies* **(Attachment 1)** are always maintained and fully functional.

6.2. **Pre-Departure Procedures:**

6.2.1. **Notification:** Notify SCC of their daily work assignment and location.

6.2.2. **Pre-Departure Checklist:** Conduct daily pre-departure inspections of their assigned GWA official vehicle and CCTV trailer using the respective *Pre-Departure Checklists* **(Attachments 2 and 3)** to ensure they are fully functional and ready for use.

6.3. **Sewer Cleaning:** The SML must be flushed and cleaned with either the Combination truck or High-Velocity Jetter (Jetter) before each inspection[3].

6.4. **Observations:** All observations and defects must be recorded in the PACP report using the proper PACP codes outlined in NASSCO's PACP Reference Manual. The report must include a video recording and digital photographs.

[2] SOP-1500-WP-001, *Water Outage & Road Closure Notifications to the Media/Public*.
[3] For further guidance, refer to SOP-1500-WWC-001, *Hydro Flushing*.

6.5. **Video Recordings:** Video footage must be done using NASSCO's standard format, and for the entire pipe segment from one (1) SMH to SMH, it shall not exceed a speed greater than thirty (30) feet per minute.

6.6. **CCTV Inspection Procedures:** The general operating procedures for the pumps are listed below. For detailed operating procedures, consult the Operator's Manual[4]. Upon arrival at the site, operators shall perform the following based on their assignment:

6.6.1. Upon arrival at the site, park the CCTV trailer so its rear faces the front of the SMH. Turn on the beacon light and place chock blocks on each required tire.

6.6.2. Set up the appropriate traffic control measures[5].

6.6.3. Using proper lifting techniques, open the SMH using the manhole hook and begin ventilating the invert.

6.6.4. Place a safety cage around the access point (SMH, cleanout, etc.) to protect your work area.

6.6.5. Start the vehicle-mounted generator by pushing the generator switch to the start position until it is operating.

6.6.6. Turn on the Power Control Unit. The Computer Control Unit (CCU) will then be initialized.

6.6.7. Connect the laptop to the monitor and turn it on.

6.6.8. Test the iris and focus controls. If using a 380 Pan/Tilt camera, aim the lens to the left, right, up, and down.

6.6.9. Open the Granite Net software (Granite Net) on the laptop and display the GIS to confirm the location of the sewer segment to be inspected.

6.6.10. When the location is confirmed, create a new file for inspection.

6.6.11. Input the required PACP Header Section (Header) data. See *PACP Inspection Form – Header Section* **(Attachment 4)**.

6.6.12. Lower the camera into the SMH using the lowering poles or winch.

6.6.13. Place the camera inside the pipe using the tiger tail to prevent damage to the cable.

6.6.14. Ensure the information entered in the PACP Header is correct before starting the video recording.

6.6.15. Click "start video recording" on the inspection pane to display the header information on the screen and begin the video recording.

6.6.16. Enter two consecutive codes in the details section: 1) Access Point Code (AMH) to identify the type of access point where the inspection will begin, and 2) Water Level Code (MWL) to ensure the water level is recorded for at least one location along the pipe segment. See *PACP Inspection Form – Initial Coding* **(Attachment 5)**.

[4] Multi-Conductor TV Inspection System Operator's Manual.
[5] SOP T.103, *Traffic Control Policy*.

6.6.17. Move the camera through the SML in a forward motion.

6.6.17.1. The camera shall travel in the direction of the flow.

6.6.17.2. If that's not possible, the camera shall be permitted to travel against the flow.

6.6.17.3. Always watch the TV monitor when moving the camera. Make sure the camera moves freely through the pipeline. **Do not force the camera past any obstructions or large offsets.**

6.6.17.4. Always slow the camera down when approaching.

6.6.18. If a defect or lateral connection is observed in the SML, the operator shall record his/her findings in the Inspection Observation List.

6.6.18.1. In the "Code" column, each defect observed must be assigned an appropriate NASSCO PACP number grade from 1 (excellent) to 5 (severe)[6]. See *PACP Inspection Form – Details Section* **(Attachment 6)**.

6.6.19. Once the inspection is completed, the operator must conclude the inspection by entering "AMH" in the "Code" column in the details section of the PACP Inspection Form.

6.6.20. Save the data by clicking on the "stop survey" button.

6.6.21. The PACP report will now be automatically generated through NASSCO's Granite Net software.

6.6.22. Retrieve the camera from the SMH in a reverse motion towards the SMH start access point.

6.6.23. Watch the TV monitor to ensure that the camera does not hang up on any laterals or other pipeline obstructions.

6.6.24. Use the lowering poles or winch to pull the camera from the SMH.

6.6.25. Close the SMH cover.

6.6.26. To turn off the camera, click the "configure equipment" switch in the Granite Net system to the off position.

6.6.27. Turn off the generator from the main control panel. Fold up the footage head arm and store all gear securely before moving the truck.

6.6.28. If multiple locations are scheduled for the day, skip sections 6.6.26. and 6.6.27. above until the last location is completed.

6.6.29. Retrieve and disinfect all equipment and supplies after each inspection. Properly store it back onto the GWA Official Vehicle or CCTV Trailer.

6.6.30. Secure the work area.

6.7. **Special Conditions:**

[6] For further guidance, refer to NASSCO'S PACP Reference Manual.

6.7.1. If the camera encounters debris or obstructions, such as rocks, gravel, sand, silt, or rags, the operator must pause the video and move the camera back twenty (20) to thirty (30) feet from the debris.

6.7.2. The CCTV operator shall notify the PS Supervisor, who will contact the COU crew assigned to the Jetter to re-flush the SML and pump out the debris.

6.7.3. Once the debris or obstruction is removed, the CCTV operator may resume the video inspection throughout the SML until the next SMH is reached.

6.7.4. If the CCTV equipment cannot access the SMH, the SL RAT could be used to rate the sewer line condition.

6.8. **Equipment Disinfection:** All equipment and supplies must be cleaned using a disinfecting solution (e.g., Dawn dish soap, Simple Green, etc.) before securing it back onto the CCTV Trailer or GWA Official Vehicle.

6.9. **Data Download:** Before the end of each shift, the operator shall download the CCTV inspection data, which includes the PACP report, video footage, and photo files.

6.9.1. To initiate the first data download, connect the laptop to the internet.

6.9.2. The data is downloaded daily onto the stand-alone Granite Net between 6:00 p.m. and 6:00 a.m.

6.9.3. After the data is downloaded onto Granite Net, it will be transferred first to the network-attached storage (NAS) and then to GWA's main server.

6.10. **Reporting:**

6.10.1. **Damage Reporting:** When the Operator discovers damage(s) to the SML or SMH, the following actions must be taken:

6.10.1.1. Immediately notify the PS Supervisor of the potential damage or defect.

6.10.1.2. Once the CCTV inspection team confirms the damage or defect, the PS Supervisor will mark the estimated location of the affected area. The PS Supervisor will then send the marked location, video footage, GIS map location, and PACP report to the Maintenance Supervisor to create a work order for the repair(s).

6.10.2. **GIS Data Submission:** If any discrepancies are observed between the actual field data and the GIS mapping information, it must be documented in the PACP report.

6.10.2.1. After returning from the field, the Operator will download the PACP report and submit it to the PS Supervisor for review.

6.10.2.2. The PS Supervisor must then review the PACP report to verify the identified errors between the GIS mapping information and the field data.

6.10.2.3. If any errors or discrepancies are found, the PS Supervisor must submit the PACP report to the GIS Manager for data correction before the end of the shift[7].

[7] See SOP on *GIS Data Integration Post Field Repair Activities* (draft).

a. The submission must include updated pipe data, as well as corrected locations of the SMH, SML, service laterals, gravity mains, force mains, and government cleanouts.

6.10.3. **Monthly Reporting:** At the end of each month, the PS Supervisor will submit a detailed report to the O&M Manager. The report includes map locations, sewer graphs, progress, equipment status, and NASSCO ratings. The O&M Manager reviews the accuracy and submits it to the Assistant General Manager of Operations (AGM-O) and General Manager (GM) for final review.

6.10.4. **Quarterly Reporting:** At the end of each quarter, the PS Supervisor will submit a detailed report to the Compliance and Safety (C&S) division that provides information such as the sewer graphs and the total miles covered. C&S will include this in their divisional report to the United States Environmental Protection Agency (USEPA).

6.11. **Training:** The O&M Manager should conduct training on CCTV sewer line inspection when needed. All new or applicable employees must receive training and sign the *Employee's Acknowledgment Receipt* **(Attachment 7)** to confirm their understanding and compliance with the procedures outlined in this SOP.

6.12. **Non-Compliance with this SOP:**

6.12.1. **Employee:** Failure of the employee to adhere and comply with any of the guidelines, policies, and procedures stated herein may result in progressive or adverse disciplinary action, including but not limited to suspension, demotion, or termination of employment as provided by GWA Personnel Rules and Regulations (PR&R).

6.12.2. **Supervisors and Managers:** Failure of the Manager or Supervisor to report and enforce all the guidelines, policies, and procedures stated herein may result in progressive or adverse disciplinary action, including but not limited to suspension, demotion, or termination of employment as provided by GWA PR&R.

7.0 Document Approvals

Role	Position	Name of Approver	Approval Signature	Date Approved
Authors	Pump Station Supervisor Legal Secretary III	Frank Sablan & Antonette Dione A. Gutierrez	Approval on File	On File
Policy Owner	Assistant General Manager for Operations (AGM-O)	Thomas A. Cruz, P.E.	Approval on File	On File
Final Approver	General Manager	Miguel C. Bordallo, P.E.	Page 1	Page 1

By existing Guam and Federal laws, the contents of this SOP were reviewed thoroughly by its Policy Owner and was found to be:

☒ appropriate for publication on the GWA website without compromising the security of GWA's system or the public's health and safety.

☐ not appropriate for publication on the GWA website because it might jeopardize the security of GWA's system or the public's health and safety.

8.0 Records of Revisions

All suggestions for improvement shall be directed to the Policy Owner indicated below. The Policy Owner will consider input received, develop recommendations on how to address the suggestions

and obtain authorization to make the recommended changes. Updates, revisions, corrections and waivers to this SOP shall be made in writing and be approved by the GM.

8.1. Policy Owner: Assistant General Manager for Operations

8.2. Authorization: General Manager

Effective Date	Revision Letter	Document Authors	Description of Change
Page 1	A	Frank Sablan & Antonette Dione A. Gutierrez	Initial Release of Policy/Procedure

9.0 References

9.1. Office of Water Programs. “High-Velocity Cleaner (HVC).” Sacramento State University. https://www.owp.csus.edu/glossary/high-velocity-cleaner.php.

9.2. SOP-1500-WP-001, *Water Outage & Road Closure Notifications to the Media/Public*.

9.3. SOP-1500-WWC-001, *Hydro Flushing*.

9.4. Multi-Conductor TV Inspection System Operator’s Manual.

9.5. SOP T.103, *Traffic Control Policy*.

9.6. National Association of Sewer Service Companies’ Pipeline Assessment Certification Program Reference Manual.

9.7. *GIS Data Integration Post Field Repair Activities* SOP (draft).

Attachment 1: CCTV Equipment and Supplies

GUAM WATERWORKS AUTHORITY
Gloria B. Nelson Public Service Building
688 Route 15
Mangilao, Guam 96913
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CCTV SEWER LINE INSPECTION
CCTV EQUIPMENT AND SUPPLIES

- Camera Tube- Oz II, Oz III
- Transporters: Steerable Pipe Ranger, Pipe Ranger, WTRIII, Ultra Shorty
- Generator
- PCU-Power Control Unit
- CCU-Circuit Control Unit
- Winch/Down Poles
- CCTV Reel
- Gold Cable
- Assorted Tools (e.g., Allen wrench, screwdriver (star & flat set), pliers, cutter pliers, vise grips, ratchet, socket set, box wrench sets, box cutters, pipe wrench, adjustable wrenches, etc.)
- Various Tires
- 6inch-48 Adapter Plates
- Magnetic Manhole Opener
- Manhole Hooks
- Rollers
- Tiger Tail
- Laptop
- Electric Lift
- Portable Camera
- Spare Y Eliminator
- 15 Gallon Potable Water Tank
- Gloves
- Cleaning Agents (e.g., Dawn dishwashing liquid, simple green, etc.)
- Rags, Shop Towels, Clorox Wipes, Trash Bags
- Mop Broom

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Attachment 2: GWA Official Vehicle Pre-Departure Checklist

GUAM WATERWORKS AUTHORITY

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CCTV SEWER LINE INSPECTION
GWA OFFICIAL VEHICLE PRE-DEPARTURE CHECKLIST

OPERATOR 1 (DRIVER): _____
OPERATOR 2 (PASSENGER): _____
SUPERVISOR/MANAGER: _____

DATE: _____
DIVISION: _____
CONTACT NO.: _____

VEHICLE HISTORY

YEAR: _____ **MAKE:** _____ **MODEL:** _____
LICENSE PLATE NO.: _____ **REGISTRATION EXP DATE:** _____ **GAS LEVEL:** _____
ODOMETER READING START: _____ END: _____

Body	Good	Fair	Poor
Hood	☐	☐	☐
Grill-Front	☐	☐	☐
Bumper-Front	☐	☐	☐
Bumper-Rear	☐	☐	☐
Fender-Front Left	☐	☐	☐
Fender-Front Right	☐	☐	☐
Tailgate	☐	☐	☐
Door-Driver	☐	☐	☐
Door Passenger	☐	☐	☐
Mirror-Driver	☐	☐	☐
Mirror-Passenger	☐	☐	☐
Wiper Blades	☐	☐	☐
Wiper Blades	☐	☐	☐

Tires	Good	Fair	Poor
Jack/Tire	☐	☐	☐
Spare Tire	☐	☐	☐
Tire Pressure	☐	☐	☐

Interior	Good	Fair	Poor
Horn	☐	☐	☐
Parking Brakes	☐	☐	☐
Interior Light	☐	☐	☐
Interior Gauges	☐	☐	☐
Air Condition	☐	☐	☐
Cleanliness	☐	☐	☐
Interior Lighting	☐	☐	☐

Lights	Good	Fair	Poor
Front Hazard	☐	☐	☐
Front Signal	☐	☐	☐
Headlamps High	☐	☐	☐
Headlamps Low	☐	☐	☐
Rear Hazards	☐	☐	☐
Rear Left Brake	☐	☐	☐
Rear Right Brake	☐	☐	☐
Rear Signal	☐	☐	☐

Engine	Good	Fair	Poor
Air Filter	☐	☐	☐
Battery	☐	☐	☐
Coolant Radiator	☐	☐	☐
Cap-Radiator	☐	☐	☐
Cap-Oil	☐	☐	☐

Fluid Levels	High	Normal	Low
Oil Dipstick	☐	☐	☐
Oil	☐	☐	☐
Brake Fluid	☐	☐	☐
Power Steering	☐	☐	☐

Glass	Good	Fair	Poor
Windshield	☐	☐	☐
Back Glass	☐	☐	☐
D Window	☐	☐	☐
PD Window	☐	☐	☐

REMARKS: _____

EMPLOYEE NAME: _____ SIGNATURE: _____ DATE: _____

SUPERVISOR/ MANAGER: _____ SIGNATURE: _____ DATE: _____

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Attachment 3: CCTV Trailer Pre-Departure Checklist

GUAM WATERWORKS AUTHORITY

Gloria B. Nelson Public Service Building
688 Route 15
Mangilao, Guam 96913
franks@guamwaterworks.org

CCTV SEWER LINE INSPECTION
CCTV TRAILER PRE-DEPARTURE CHECKLIST

OPERATOR 1 (DRIVER): _____
OPERATOR 2 (PASSENGER): _____
SUPERVISOR: _____

DATE: _____
DIVISION: _____
CONTACT NO.: _____

CCTV TRAILER HISTORY

LICENSE PLATE NO.: _____ **REGISTRATION EXP DATE:** _____

GENERATOR HOURS: _____ **GAS LEVEL:** _____

Trailer	Good	Fair	Poor
Front Panel	☐	☐	☐
Left Panel	☐	☐	☐
Right Panel	☐	☐	☐
Rear Door	☐	☐	☐
Side Door	☐	☐	☐
Chasis	☐	☐	☐
Stabilizer	☐	☐	☐

Tires	Good	Fair	Poor
Condition	☐	☐	☐
Tire Pressure	☐	☐	☐

Generator	Good	Fair	Poor
Oil Level	☐	☐	☐
Fuel Level	☐	☐	☐

Lights	Good	Fair	Poor
Emergency Becon	☐	☐	☐
Left Brake Light	☐	☐	☐
Right Brake Light	☐	☐	☐
Left Turn Signal	☐	☐	☐
Right Turn Signal	☐	☐	☐
Hazard Lights	☐	☐	☐
Emergency Brake Cable	☐	☐	☐
Trailer Hitch	☐	☐	☐

Interior	Good	Fair	Poor
Cleanliness	☐	☐	☐
AC Unit	☐	☐	☐

Trailer Equip.	Good	Fair	Poor
Down Poles	☐	☐	☐
Boom Winch	☐	☐	☐
Cable Reel	☐	☐	☐
Cable Roller	☐	☐	☐
Tiger Tail	☐	☐	☐
Monitors	☐	☐	☐
CCTV Controls	☐	☐	☐
Laptop	☐	☐	☐

REMARKS: _____

EMPLOYEE NAME: _____ SIGNATURE: _____ DATE: _____

SUPERVISOR/ MANAGER: _____ SIGNATURE: _____ DATE: _____

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Attachment 4: PACP Inspection Form – Header Section

GUAM WATERWORKS AUTHORITY

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Mangilao, Guam 96913
franks@guamwaterworks.org

CCTV SEWER LINE INSPECTION
PACP INSPECTION FORM – HEADER SECTION

PACP Inspection Form - Header Section

Red font fields = Mandatory, Black font fields = Optional

General Information

1. Surveyed by	2. Certificate No.		3. Reviewed by	4.Reviewer Certificate No.
5. Owner	6. Customer		7. P/O Number	8. Work Order Number
9. Media Label	10. Project	11. Date YYYY/MM/DD	12. Time HH:MM	13. Sheet Number
14. Weather	15. Pre-Cleaning	16. Date Cleaned YYYY/MM/DD	17. Flow Control	18. Purpose of Survey
19. Direction of Survey	20. Inspection Technology Used		21. Inspection Status	
22. Consequence of Failure		23. Pressure Value		

Location

24. Drainage Area	25. Pipe Segment Reference	26. Street (Name & Number)
27. City	28. Location Code	29. Location Details

Pipe

30. Pipe Use	31. Height (Diameter)	32. Width	33. Shape
34. Material	35. Lining Method	36. Coating Method	37. Pipe Joint Length
38. Total Length	39. Length Surveyed	40. Year Constructed YYYY	41. Year Renewed YYYY

Measurements

42. Upstream MH No.	43. Upstrm MH Rim to Invert	44.Upstrm MH Rim to Grade	45.Upstrm MH Grade to Invert
46. Upstream MH Northing*	47. Upstream MH Easting*	48. Upstream MH Elevation**	
49.Downstream MH No.	50.Downstream MH Rim to Invert	51.Downstream MH Rim to Grade	
52. Downstream MH Grade to Invert	53. Downstream MH Northing*	54. Downstream MH Easting*	
55. Downstream MH Elevation**	56. MH Coordinate System*	57. MH Vertical Datum**	58. GPS Accuracy

59. Additional Information

*Entry required if Northing, Easting or Coordinate System data is recorded. **Entry required if Elevation or Vertical Datum data is recorded.

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Attachment 5: PACP Insepection Form – Initial Coding

GUAM WATERWORKS AUTHORITY
Gloria B. Nelson Public Service Building
688 Route 15
Mangilao, Guam 96913
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CCTV SEWER LINE INSPECTION
PACP INSPECTION FORM – INITIAL CODING

Initial Coding

All PACP inspections must begin with two consecutive codes entered in the Details Section at distance 0.0. They are the (1) **Access Point Code** and (2) **Water Level Code**.

The **Access Point Code (e.g. AMH)** identifies the type of access point, where the survey begins. The Access Point ID is entered in the Remarks Column.

By starting the survey with the **Water Level Code (e.g. MWL),** it ensures that the water level will be recorded for at least one location along the pipe segment. After the initial MWL observation, only significant changes in water level of 10% or more are recorded. Water level marks are to be made in terms of percentage height to the nearest 5%.

Distance (feet) (meters)	Video Ref.	Code	Continuous Defect	Value			Joint	Circumferential Location		Image Ref.	Remarks
		Group/ Descriptor/ Modifier		Dimension 1st	Dimension 2nd	%		At/ From	To		
0.0		**AMH**									30-1534
0.0		**MWL**				20					

Attachment 6: PACP Inspection Form – Details Section

GUAM WATERWORKS AUTHORITY

Gloria B. Nelson Public Service Building
688 Route 15
Mangilao, Guam 96913
franks@guamwaterworks.org

CCTV SEWER LINE INSPECTION
PACP INSPECTION FORM – DETAILS SECTION

PACP Inspection Form Details Section

The Details Section of the PACP Inspection Form is used to enter observations and defects encountered or observed in the pipeline. When using a hard copy of the Form and all rows in the Details Section of the PACP Inspection Form are filled, a Continuation Sheet is used to enter more observations.

For each segment length, start a new PACP Inspection Form. If a second inspection or reverse setup is required due to a blockage in the pipe, a new PACP Inspection Form will be required. If an unmapped access point is located during the survey, enter the appropriate Access Point Code and an appropriate comment in the Remarks Column and start a new PACP Inspection Form.

Example of PACP Inspection Form Details Section

Distance (feet) (meters)	Video Ref.	Code	Continuous Defect	Value			Joint	Circumferential Location		Image Ref.	Remarks
		Group/ Descriptor/ Modifier		Dimension 1"	Dimension 2nd	%		At/ From	To		

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Attachment 7: Employee's Acknowledgement Receipt

GUAM WATERWORKS AUTHORITY

Gloria B. Nelson Public Service Building
688 Route 15
Mangilao, Guam 96913

CCTV SEWER LINE INSPECTION
EMPLOYEE'S ACKNOWLEDGMENT RECEIPT

I, the undersigned, an employee of the Guam Waterworks Authority, hereby acknowledge receipt of SOP-1500-WWC-002 entitled "*CCTV Sewer Line Inspection*" this _____ day of _____, 20____.

Employee's Name/Badge No.:	Employee's Signature:	Date:

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