



TECHNICAL MEMORANDUM

Date: 30 July 2024

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Environmental Affairs Department (EAD), Water Quality Team Lead
Hugh Nelson, Cherokee Federal, Sr. Environmental Project Manager

From: AH Engineering Consultants (AH)

Subject: MCAS Cherry Point, MCAS Atlantic Field, and MCAS BT11-Piney Island
Drinking Water Systems – Lead Service Line Investigations and
Inventories

1. INTRODUCTION

AH was contracted by Cherokee Strategic Solutions LLC to prepare the initial drinking water lead service line inventories (LSLIs) for the following public water systems (PWSs):

- MCAS Cherry Point – Community Water System (CWS), PWS Identification Number (ID): NC0425035
- MCAS Atlantic Field – Non-Transient Non-Community Water System (NTNCWS), PWS ID: NC0416447
- MCAS BT11-Piney Island – NTNCWS, PWS ID: NC0416449

The purpose of this memorandum is to summarize the information collected and development of the service line inventories.

1.1 FEDERAL REGULATION BACKGROUND

On 15 January 2021, the US Environmental Protection Agency (EPA) issued the Lead and Copper Rule Revisions (LCRR). In addition to new standards for lead sampling and corrosion control, the LCRR obligates each CWS and NTNCWS to develop and maintain a LSLI. Each system must submit their initial inventory to their state regulator by 16 October 2024. The LSLI must include

the material classification of each service line and the source of the information used to classify each service line. The LSLI must also be made accessible to the public (EPA, 2021). Where possible, the inventory should include additional sources of lead (e.g., goosenecks, pigtails, connectors, fixtures, solders, flux) whenever it is known. The EPA published guidance in August 2022 that describes the type of inventory required, offers direction on inventory planning, and details methods for developing the inventory (EPA, 2022).

According to EPA guidance, a service line is defined as “the pipe connecting the water main to the interior plumbing in a building”. The LCRR requires that one of the following four material classifications be applied to each service line:

1. **Lead** – A service line with a section of pipe (excluding goosenecks, pigtails, and connectors) that is made of lead. Goosenecks, pigtails, and connectors are typically a 2-foot or less section of flexible pipe that connects the water main to a valve.
2. **Galvanized Requiring Replacement (GRR)** – A galvanized service line that is or was downstream of a lead service line or a pipe with an unknown lead status.
3. **Non-Lead** – A service line that has been determined (through evidence-based records, methods, or techniques) to not be lead or GRR.
4. **Lead Status Unknown** – A service line with an unknown material type and no documented evidence supporting material classification.

1.2 STATE REQUIREMENTS

Under the LCRR, water systems are required to notify residents connected to a service line classified as lead, GRR, or lead status unknown within 30 days following the completion of the LSLI. Along with the EPA guidelines, the North Carolina Department of Environmental Quality (NCDEQ) published several resources, including inventory development guidance/instructions and an LSLI template that mirrors the EPA inventory template (NCDEQ, n.d.). AH personnel utilized the NCDEQ template for the MCAS Cherry Point, MCAS Atlantic Field, and MCAS BT11-Piney Island inventories.

2. METHODS

EPA guidance recommends water systems use multiple approaches to develop their inventories, starting with review of historical records to generate a list of unknowns that can be field verified through visual inspections, excavation, and/or sampling (EPA, 2022). Historical record sources

include previous material evaluations, construction and plumbing codes, water system records, maintenance records, construction drawings, and distribution maps (Hensley et al., 2021).

2.1 HISTORICAL RECORDS REVIEW

AH personnel utilized a variety of methods to generate the service line inventories for MCAS Cherry Point, MCAS Atlantic Field, and MCAS BT11-Piney Island including:

- Conducted coordination meetings with key stakeholders responsible for the management of water distribution lines, facilities, and housing – AH personnel gave an overview of the project and inquired about the historical records available, service line management, and historical knowledge of the water system.
- Reviewed geographic information system (GIS) data relative to distribution water lines and extracted data on service line operational status, material, size, and installation date – AH personnel utilized the GIS data as the basis of information on service lines and confirmed the data with additional sources and field verifications. NCDEQ guidance notes that any service line with a diameter greater than 2 inches can be classified as non-lead (NCDEQ, 2024); therefore, all service lines greater than 2 inches were classified as non-lead for the MCAS Cherry Point, MCAS Atlantic Field, and MCAS BT11-Piney Island inventories.
- Reviewed computer-aided design (CAD) mapping of the water distribution system – AH personnel reviewed digital copies of CAD mapping dated 1998 and 2001 that provided coverage of the full MCAS Cherry Point water system (these maps did not include the MCAS Atlantic Field or MCAS BT11-Piney Island water systems). Per interviews with MCAS Cherry Point PWD personnel, these maps were considered the most accurate records of the MCAS Cherry Point water system. These CAD maps were used to both supplement the GIS data and fill in information missing from the GIS data.
- Referenced real estate property records sourced from the internet Naval Facility Assets Data Store (INFADS) database to identify facility built/commissioning dates – Service lines for facilities commissioned on/after January 1, 1989 were classified as non-lead for the MCAS Cherry Point, MCAS Atlantic Field, and MCAS BT11-Piney Island inventories¹.
- Researched the history of the installation including time periods of construction and information relevant to the LSLI – AH personnel reviewed the *Distribution System Material Survey Evaluation and LCR Sampling Plan* developed in March 2007 for each of the three water systems (AH, 2007) and the *Lead and Copper Rule Monitoring Plan and Consumer Notification* developed in October 2020 for the MCAS Cherry Point water system (AH, 2020).
- Conducted interviews with various MCAS Cherry Point PWD, EAD, and housing maintenance personnel – These personnel had knowledge of the water system layouts, service line materials, and general history of the installation water system and/or housing

¹ Although North Carolina implemented a lead pipe ban in March 1987, building commissioning dates are not necessarily the same as water service line installation dates; therefore, a commissioning date of January 1, 1989 was selected as the date when lead pipes would no longer be installed as a conservative measure.

areas. Based on these interviews, the following buildings at MCAS Cherry Point have either recently been demolished or are scheduled for demolition in the near future.

These buildings were not included in the MCAS Cherry Point LSLI:

- Housing Areas (Street Addresses): 10 McKinley Drive, 343 Wilson Drive, 6 Roosevelt Boulevard, 2 Grant Place, 4 Adams Drive, 14 Adams Drive, 20 Adams Drive, 20 Washington Drive, 43 Washington Drive, 29 Buchanan Drive, 33 Buchanan Drive, 10 Garfield Place, 9 Stanley Road, 32 Stanley Road, 36 Stanley Road, 9 Durham Road, and 8 Catawba Road.
- Non-Housing Areas (Facility Numbers): 131, 140, 1670, 1699, 3745, 4157, 4158, and 4159.

2.2 FIELD VERIFICATIONS

AH attempted to visually verify service lines when the material classification could not be determined through a historical records review. AH generated a building field verification list that included facilities known to have water services constructed before January 1, 1989 with service lines smaller than 2 inches in diameter. Some facilities with service lines installed after January 1, 1989 and larger lines were added to confirm the validity of historical records and assumptions made. AH performed visual inspections in meter pits for service lines with a meter, at shutoff valves when the service lines were easily visible, or in mechanical rooms inside the buildings. Typically, indoor shutoff valves were in the mechanical rooms or utility closets but were also found behind panels in some restrooms for smaller facilities. If the material of the service line was not obvious upon visual inspection, AH personnel scratched and tested the magnetism to identify the material. AH documented only the material and size of service lines upstream of the shutoff valve inside buildings. For meter pit or outdoor valve box verifications, both sides of the meter/valve were inspected whenever possible.

2.3 INVENTORY DEVELOPMENT

AH compiled the data from both the historical records review and the field verifications into the initial inventories. AH generated separate inventories for each of the three water systems using the NCDEQ LSLI template. The template differentiates “system-owned” and “customer-owned” sections of each service line that has a split ownership, typically found in non-military residential areas. A summary of service line ownership for MCAS Cherry Point, MCAS Atlantic Field, and MCAS BT11-Piney Island is provided below:

- MCAS Cherry Point owns all water mains and service lines on base; however, for on-base housing areas, operation & maintenance (including repair and replacement) responsibilities are split between MCAS Cherry Point and the housing contractor, Atlantic Marine Corps Communities (AMCC). MCAS Cherry Point is responsible for water mains and AMCC assumes responsibility for the service lines (starting immediately off the main). Note that even with this operation & maintenance responsibility split, MCAS Cherry Point maintains physical ownership of all service lines (i.e., all service lines are system-owned).
- All service lines at MCAS Atlantic Field are system-owned.
- All service lines at MCAS BT11-Piney Island are system-owned.

Since the service lines for the MCAS Cherry Point, MCAS Atlantic Field, and MCAS BT11-Piney Island water systems are completely owned by the system, information was only filled out under the “system-owned” section. The sources of information used to classify each service line are detailed in the “Notes” column.

3. INVENTORY RESULTS

3.1 OVERVIEW

AH developed the initial inventories for the MCAS Cherry Point, Atlantic Field, and BT11-Piney Island water systems. No lead service lines were found at any of the sites; however, for the MCAS Cherry Point water system, there were 20 service lines of unknown material. These unknown service lines were classified as “Unknown – Unlikely Lead” since there are no historical records to support that lead pipes were used in the distribution systems or interior plumbing at MCAS Cherry Point. Additionally, 83 service lines in the MCAS Cherry Point water system were classified as galvanized service lines. Based on the records review, no galvanized service line was ever downstream of a lead service line (or service line of unknown material), which would require classification as a GRR.

3.2 MCAS CHERRY POINT INVENTORY

The MCAS Cherry Point LSLI was primarily compiled using GIS/CAD data, iNFADS data, previous materials surveys, and field verifications. Classifications of the 1,915 service lines included in the inventory are summarized in Table 3-1.

Table 3-1 MCAS Cherry Point Service Line Inventory Summary

Material Classification	No. of Service Lines
Lead	0
GRR	0
Non-Lead (Copper)	177
Non-Lead (Galvanized)	83
Non-Lead (Other)	449
Non-Lead (Plastic)	1,186
Lead Status Unknown (Unlikely Lead)	20
Total	1,915

3.3 MCAS ATLANTIC FIELD INVENTORY

The MCAS Atlantic Field LSLI was primarily compiled using GIS/CAD data, iNFADS data, and previous materials surveys. Classifications of the 5 service lines included in the inventory are summarized in Table 3-2.

Table 3-2 MCAS Atlantic Field Service Line Inventory Summary

Material Classification	No. of Service Lines
Lead	0
GRR	0
Non-Lead (Copper)	0
Non-Lead (Galvanized)	0
Non-Lead (Other)	0
Non-Lead (Plastic)	5
Lead Status Unknown	0
Total	5

3.4 MCAS BT11-PINEY ISLAND INVENTORY

The MCAS BT11-Piney Island LSLI was primarily compiled using GIS/CAD data, iNFADS data, and previous materials surveys. Classifications of the 6 service lines included in the inventory are summarized in Table 3-3.

Table 3-3 MCAS BT11-Piney Island Service Line Inventory Summary

Material Classification	No. of Service Lines
Lead	0
GRR	0
Non-Lead (Copper)	0
Non-Lead (Galvanized)	0
Non-Lead (Other)	0
Non-Lead (Plastic)	6
Lead Status Unknown	0
Total	6

4. CONCLUSION AND FURTHER ACTIONS

AH personnel classified 1,906 out of 1,926 service lines located throughout the MCAS Cherry Point, MCAS Atlantic Field, and MCAS BT11-Piney Island water systems as non-lead.

Table 4-1 summarizes the 20 service lines classified as “Lead Status Unknown.” All 20 unknown service lines are domestic services in the MCAS Cherry Point water system. For these 20 service lines, there were no records available that identified service line materials, and attempts at field verification were inconclusive. Although the service line materials are unknown, these service lines are not suspected to be lead based on all information compiled for the LSLIs. There are other methods outside of the scope of this project that can be used to identify their materials (e.g., closed-circuit television inspection, mechanical excavation).

If the material cannot be identified for all 20 unknown service lines, MCAS Cherry Point must complete the following for whichever service lines cannot be determined:

- Notify personnel at facilities served by a lead status unknown service line within 30 days following completion/finalization of the LSLI.
- Develop a Lead Service Line Replacement (LSLR) plan for all service lines of unknown material.

The EPA website provides guidance on developing LSLR plans (EPA, 2023). The LSLIs for MCAS Cherry Point, MCAS Atlantic Field, and MCAS BT11-Piney Island must be submitted electronically to NCDEQ before the October 16, 2024 deadline.

Table 4-1 Summary of Service Lines Classified as “Lead Status Unknown”

Service Line Unique ID (from LSLI)	Facility ID	Facility Description (from GIS)	Facility Built Date (from iNFADS)	Service Line Diameter (inches)
MCAS SL-0005	83	MAINT METAL SHOP/6500 HQ	7/1/1944	2
MCAS SL-0042	133	(FRC/MCCS) ENGINE OVERHAUL-TEST BLDG	7/1/1944	Unknown
MCAS SL-0043	133	(FRC/MCCS) ENGINE OVERHAUL-TEST BLDG	7/1/1944	Unknown
MCAS SL-0074	137	(FRC/MCCS) OVERHAUL-REPAIR SHOPS	7/1/1943	2
MCAS SL-0075	137	(FRC/MCCS) OVERHAUL-REPAIR SHOPS	7/1/1943	2
MCAS SL-0076	137	(FRC/MCCS) OVERHAUL-REPAIR SHOPS	7/1/1943	1.5
MCAS SL-0172	293 ^a	(MCCS) 7 DAY STORE	5/20/1942	2
MCAS SL-0373	1646	STORAGE AIR-GROUND-ORGANIC-UNITS MARCOR	7/1/1957	2
MCAS SL-0419	1799	OP HAZARD STRG	7/1/1969	0.5
MCAS SL-0644	3898	OP TRAINER BLDG	5/18/1979	1
MCAS SL-0645	3898	OP TRAINER BLDG	5/18/1979	1.5
MCAS SL-0649	3916	AVIATION ARMAMENT SHOP	4/23/1981	1.5
MCAS SL-0694	4036	A/C ACOUS ENCLOSURE / 2116 AIRCRAFT MAINTENANCE SHOP, DEPOT	5/12/1986	2
MCAS SL-0706	4067	(CLC-21) FIELD MAINT SHOP	2/21/1986	2
MCAS SL-0715	4156	ORD OPERATION BLDG	6/20/1986	2
MCAS SL-0740	4213 ^b	(2D LAAD) OPERATIONAL TRAINER BLDG	9/1/1988	1.5
MCAS SL-0742	4214 ^b	OPERATIONAL MAINT FACILITY	9/1/1988	2
MCAS SL-0744	4215 ^b	FIRE AND BATTERY OFFICE (2DLADD)	9/1/1988	2
MCAS SL-0747	4221 ^c	POL OPERATION-SAMPLING-TESTING BUILDING	9/25/1987	0.5
MCAS SL-0758	4228	ELEC COM MAINT SHOP	3/29/1988	2

Notes:

- a. Building 293 is currently scheduled for demolition in 2030.
- b. Buildings 4213, 4214, and 4215 are currently scheduled for demolition in 2028.
- c. Building 4221 is currently scheduled for demolition in 2026.

REFERENCES

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United States Environmental Protection Agency (15 January 2021). National Primary Drinking Water Regulations: Lead and Copper Rule Revisions, Final Rule. *Federal Register*, Volume 86, Number 10, Pages 4198 to 4312. <https://www.govinfo.gov/content/pkg/FR-2021-01-15/pdf/2020-28691.pdf>.

ATTACHMENTS

Attachment 1 – Final MCAS Cherry Point LSLI Database (Provided Electronically Only)

Attachment 2 – Final MCAS Atlantic Field LSLI Database (Provided Electronically Only)

Attachment 3 – Final MCAS BT11-Piney Island LSLI Database (Provided Electronically Only)