

Water Survey Chronology of Events

CHRONOLOGY IS BASED ON INFORMATION MOST CURRENTLY AVAILABLE. THIS CHRONOLOGY WAS LAST UPDATED NOVEMBER 5, 2001, THIS DOCUMENT IS SUBJECT TO MODIFICATION AS NEW INFORMATION BECOMES AVAILABLE.

1972 --

Holcomb Boulevard Water Treatment Plant (WTP) and Distribution System become operational. Water to Paradise Point, Berkeley Manor, Watkins Village and Midway Park Family Housing Areas now comes from Holcomb Boulevard System. Prior to 1972, these areas were served by the Hadnot Point System.

1977 --

In accordance with Safe Drinking Water Act (SDWA) requirements, all eight water supply systems aboard the Base (Courthouse Bay, Rifle Range, Onslow Beach, Hadnot Point, Holcomb Blvd., Tarawa Terrace, Montford Point, and New River) were tested for possible presence of two herbicides (2,4-Dichlorophenoxyacetic Acid and 2,4,5-TP-Trichloro-phenoxypropionic Acid) and four chlorinated hydrocarbons (Endrin, Lindane, Methoxychlor and Toxaphene). The detection limit was established at 1 ppb for the chlorinated hydrocarbon analysis and 0.1 ppb for the herbicide analysis. None of these compounds were detected.

Apr 1979 --

Study of Tarawa Terrace (TT) and Montford Point WTPs recommended demolishing plants due to age, expanding Holcomb Blvd. WTP and running a water line to TT and Camp Johnson. Base submits MILCON project to demolish TT and Montford Point WTPs.

26 Nov 1979 --

EPA publishes Suggested No Adverse Reaction Level (SNARL) in Federal Register for TCE. EPA recommends a one-day SNARL of 2000 ppb, a ten-day SNARL of 200 ppb, and a long-term SNARL of 75 ppb.

29 Nov 1979 --

EPA publishes final regulations for the control of total trihalomethanes ("TTHMs") as an amendment to the National Primary Drinking Water Standards. This regulation establishes a Maximum Contaminant Level (MCL) of 0.10 mg/L (ppm) for TTHMs and also establishes a timeline for monitoring for and compliance with this MCL. For water treatment systems serving between 10,000 and 75,000 people, such as Hadnot Point and MCAS, New River WTPs, mandatory monitoring was required to begin by 29 November 1982 and compliance with the new standard was to be achieved by 29 November 1983. For water treatment systems serving less than 10,000 people, such as TT, Montford Point, Rifle Range, Courthouse Bay, Onslow Beach, and Holcomb Blvd., the regulation left primacy with the respective State.

10 Feb 1980 --

EPA publishes SNARL in Federal Register for PCE. EPA recommends a one-day SNARL of 2300 ppb, a ten-day SNARL of 175 ppb, and a long-term SNARL of 20 ppb.

Oct 1980 --

A composite sample, composed of water from all eight WTPs, is analyzed for priority pollutants by Jennings Laboratories. Analytical results show detections of 1,1,1-Trichloroethane (.005ppb), 1,1-Dichloroethane (.004ppb), 1,1-Dichloroethylene (.006ppb), 1,1,2-Trichloroethane (.006ppb), 1,1,2,2 Tetrachloroethane (.006ppb), Chloroethane (.01ppb), 2-Chloroethyl vinyl ether (.08ppb), Trichloroethene (.005ppb), 1,2-trans-dichloroethene (.006ppb), and bis(chloromethyl)ether (.003ppb). All contaminants were found at concentrations equal to the detection limits.

Oct 1980 --

Naval Facilities Engineering Command, Atlantic Division (LANTDIV) initiated voluntary sampling of Camp Lejeune's Hadnot Point and MCAS, New River water distribution systems for TTHMs in anticipation of the November 1982 deadline for mandatory TTHM sampling and analysis. The U.S. Army Environmental Hygiene Agency (USAEHA) from Fort McPherson conducted the water testing and discovered unidentified chlorinated hydrocarbons in the Hadnot Point water system.

1980-81 --

USAEHA continues sampling Hadnot Point and MCAS, New River water distribution systems for TTHMs. The analytical results of the samples taken in December 1980, January 1981, February 1981, and March 1981 from the Hadnot Point WTP indicate that unidentified chlorinated hydrocarbons are interfering with the TTHM analysis. Analytics from MCAS, New River System do not indicate interference from unidentified chlorinated hydrocarbons.

Jan 1981 --

In response to the Defense Environmental Quality Program Policy Memorandum (DEQPPM) 80-6, the Department of the Navy developed the Naval Assessment and Control of Institutional Pollutants (NACIP) Program. The purpose of this program was to identify, investigate, assess, characterize, and clean up or control releases of hazardous substances, and to reduce the risk to human health and the environment from past waste disposal operations and hazardous material spills at Navy/Marine Corps activities.

Jul 1981 --

USAEHA TTHM sampling/analysis expanded to include the Rifle Range water distribution system.

Aug 1981 --

LANTDIV provided MCB, Camp Lejeune results of the on-going TTHM sampling performed by the USAEHA on the Hadnot Point and MCAS, New River water systems.

1982-83 --

MILCON project approved to expand the Holcomb Blvd. WTP and demolish the TT WTP.

Jan 1982 --

NACIP Initial Assessment Study ("IAS") begins at Camp Lejeune. The intent of this study is to identify areas of environmental concern, including groundwater contamination.

Feb 82 --

MCAS New River is marginally above TTHM limits based on 1980 study. All other systems are within standards. Camp Lejeune is notified that the NACIP IAS team will visit Camp Lejeune in March 1982.

Apr 1982 --

Camp Lejeune samples all eight water systems for TTHMs. Hadnot Point and MCAS New River were required to be tested, while testing of the other water systems was voluntary.

May 1982 --

Grainger provides analytical results for April TTHM sampling. Camp Lejeune is informed that solvents in the water, specifically TCE and PCE, hindered TTHM analysis in two water treatment systems, Tarawa Terrace and Hadnot Point. Camp Lejeune continues TTHM sampling at all eight water systems sampling 19-24 May and again 27-28 May.

Jun 1982 --

Camp Lejeune is informed by Grainger Laboratories that the May samples were unreliable because of poor duplication resulting from faulty sample containers and cap liners. Therefore, the second round of samples was analyzed. Results of this TTHM analysis indicate interference by

chlorinated hydrocarbons in the Hadnot Point water system. Camp Lejeune continues TTHM sampling at all eight water systems, sampling 24-25 June. All Camp Lejeune water systems are in compliance with TTHM regulations.

Jul 1982 --

Camp Lejeune receives analytical results from June's TTHM sampling. All systems are found to be in compliance. MCAS, New River remains marginally below TTHM MCL. Camp Lejeune continues sampling at all eight water systems and takes additional samples of raw and treated water from TT and Hadnot Point systems for VOC analysis.

Aug 1982 --

Camp Lejeune receives analytical results from July's sampling. Samples taken from the TT water system indicate PCE contamination at 76 ppb (raw), 82 ppb (treated), and 104 ppb (TT-2453). Re-analysis of a sample collected in May from TT-2453 showed PCE at 80 ppb. Samples taken from the Hadnot Point water system indicate PCE contamination at <1 ppb (raw and treated), 15 ppb (re-analysis of Bldg NH-1 May sample), and 1 ppb (FC-530). TCE was identified at 19 ppb (raw), 21 ppb (treated), and 1400 ppb (re-analysis of Bldg NH-1 May sample).

TTHM sampling conducted monthly from April through July did not show any TTHM problems in the Hadnot Point, TT, Montford Point, Holcomb Blvd., Courthouse Bay, or Onslow Beach systems. These systems were reduced to quarterly sampling. The New River and Rifle Range systems continued to be sampled monthly.

Camp Lejeune officials were not certain whether VOCs were coming from pipes, treatment plants, or from groundwater wells. Additionally, there was concern over the accuracy of the VOC findings. Camp Lejeune remained in contact with the State of North Carolina Water Quality Control regarding the findings of VOCs at Hadnot Point and Tarawa Terrace.

Sep 1982 --

TTHM samples for July and August indicate compliance with TTHM regulations. Contract awarded to replace water laterals in TT.

Dec 1982 --

November TTHM sampling of the eight water treatment systems indicated resumption of VOC interferences in the TT and Hadnot Point systems. The levels of PCE and TCE were not indicated in the lab results.

Jan 1983-Jul 1984 --

Base officials determine that they will have the experts from ongoing NACIP Confirmation study investigate the scope and source of VOC contamination.

Apr 1983 --

Initial Assessment Study for Marine Corps Base, Camp Lejeune is published and concludes that while none of the sites posed an immediate threat to human health or the environment, further investigation is warranted at 23 of the 76 sites. *no outside contamination*

Sep 1983 --

TTHM results of quarterly sampling indicated contamination by TCE and PCE in TT and Hadnot Point. The levels of PCE and TCE were not indicated in the lab results.

Nov 1983 --

Site visit conducted at Camp Lejeune in furtherance of NACIP Confirmation Study.

Dec 1983 --

In compliance with regulations, Camp Lejeune discontinues TTHM monitoring for water systems other than Hadnot Point and MCAS New River.

Jun 1984 --

EPA publishes proposed recommended maximum contaminant levels (RMCL) for TCE and PCE in drinking water and solicits public comment.

Jul 1984 --

Base wells are sampled for VOCs as part of the NACIP Confirmation Study in areas where chemicals were suspected to have leaked. Samples were analyzed for potential contaminants.

30 Nov 1984 --

After NACAP results are received at Camp Lejeune, Hadnot Point water treatment plant well 602 was tested and found to contain: TCE = 1,600 ppb, Trans 1,2-DCE = 630 ppb, Benzene = 121 ppb, and 1,1,2,2-TCA = 24 ppb. Well 602 was shut down on 30 Nov 84. 2375 Well 602
Dec 1984 --

Camp Lejeune's base newspaper "The Globe" publishes an article about results of water testing, contamination and corrective actions aboard the base. Notification of residents occurs to keep them informed of ongoing base efforts with regard to health and safety.

4 Dec 1984 --

Hadnot Point wells 601, 603, 608, 634, 637, and 642 were tested. Results indicate: well 601: TCE = 207 ppb, trans 1,2-DCE = 88 ppb; well 603: TCE = 4.6 ppb; well 608: TCE = 110 ppb, trans 1,2-DCE = 5.4 ppb. Wells 634, 637, and 642 reflected no contamination. The raw and treated water was tested at the water treatment plant. Results indicate the influent had: TCE = 46 ppb, trans 1,2-DCE = 15 ppb, chloroform = 10 ppb, and bromodichloromethane = 6 ppb. The effluent had: TCE = 196 ppb, trans 1,2-DCE = 83 ppb, chloroform = 16 ppb, and bromodichloromethane = 10 ppb. No 1,1,2,2-PCE was detected in either the raw or treated water.

6 Dec 1984 --

Hadnot Point wells 601 and 608 were shut down.

10 Dec 1984 --

Hadnot Point wells 601, 602, 603, 608, 634, 637, and 642 were tested. Results indicated: well 601: TCE = 230 ppb, trans 1,2-DCE = 99 ppb, methylene chloride = 10 ppb; well 602: TCE = 540 ppb, trans 1,2-DCE = 380 ppb, Benzene = 720 ppb; well 603: no detections; well 608: TCE = 13 ppb, trans 1,2-DCE = 2.4 ppb, methylene chloride = 14 ppb. Wells 634, 637, and 642 reflected methylene chloride contamination at 130 ppb, 275 ppb, and 58 ppb respectively. The treated water was then tested at the water treatment plant. Results indicated the effluent had: TCE = 2.3 ppb, trans 1,2-DCE = 2.3 ppb, and chloroform = 30 ppb.

13 Dec 1984 --

Hadnot Point well 602 was sampled again. Results exhibited: TCE = 340 ppb, trans 1,2-DCE = 230 ppb, benzene = 230 ppb, and toluene = 12 ppb.

13-19 Dec 1984 --

The raw water at the Hadnot Point plant was tested daily

14 Dec 1984 --

Hadnot Point wells 634 and 637 were shut down.

Jan 1985 --

Contract awarded to demolish TT water treatment plant and expand the Holcomb Blvd. plant.

Jan 1985 --

Monitoring for VOCs commenced at all Hadnot Point and Tarawa Terrace wells. Decision is made by Camp Lejeune to test all drinking water wells on Base for VOCs.

16 Jan 1985 --

Wells TT-26 and TT-23 were sampled.

27 Jan 1985 --

A generator fuel line at the Holcomb Boulevard water distribution plant leaked fuel into the water system. The system was immediately shut down and flushed out. Emergency back up water was pumped from the Hadnot Point system into the Holcomb Blvd. water distribution system.

31 Jan 1985 --

Tap water samples taken from Berkeley Manor Elementary School (which, because of the fuel leak, was temporarily receiving water from the Hadnot Point Plant) contained TCE at 1,148 ppb and 1,2-DCE at 407 ppb. These findings were consistent with samples taken from the Hadnot Point plant on the same day indicating the contamination originated from the emergency water supplied by the Hadnot Point Plant. Water from the clean Holcomb Blvd. system was restored approximately 5 days later.

4 Feb 1985 --

January samples revealed that Well (651) in Hadnot Point had PCE and TCE contamination: PCE = 400 ppb, TCE = 18,900 ppb, and DCE = 8070 ppb. Well 651 was immediately taken off line. All 2370

VOC contaminated wells in the Hadnot Point system are now out of operation.

4 Feb 1985 --

Holcomb Blvd and Hadnot Point plants and water distribution systems are flushed and Holcomb Blvd Water Treatment Plant is put back on line.

5 Feb 1985 --

Tap water in TT is tested again. Results reflect PCE = 215 ppb, TCE = 8.1 ppb, and DCE = 12 ppb.

Feb 1985 --

Results from Jan 85 sampling of Wells TT-26 and TT-23 were received and indicated: TT-26: PCE = 1,580 ppb, TCE = 57 ppb, DCE = 92 ppb and vinyl chloride = 27 ppb. TT-23: PCE = 132 ppb, DCE = 11 ppb, no TCE or vinyl chloride was detected.

8 Feb 1985 --

TT wells TT-23 (new well) and TT-26 are shut down. All contaminated wells in TT are now offline

12 Feb 1985 --

Finished water from the TT distribution system was tested and determined to contain no VOCs.

19 Feb 1985 --

Water from the TT distribution system was tested again and was determined to contain no VOCs. Each of the nine TT wells was also tested. No contaminants were detected in TT-25, TT-30, TT-31, TT-52, TT-53, TT-54, or TT-67. TT-26 showed: PCE = 1580 ppb, TCE = 57 ppb, DCE = 92 ppb, and vinyl chloride = 27 ppb. TT-23 (new well) reflected: PCE = 41 ppb, TCE = non-detect, DCE = 13 ppb, no vinyl chloride was found.

22 Feb 1985 --

State of North Carolina analysis of TT-26 and TT New Well (TT-23) (both of which were offline) indicated: TT-26: PCE = 3.91 ppb, TCE = 55.17 ppb, trans 1,2-DCE = trace. TT-23: PCE = 26.17 ppb, TCE = 53.53 ppb, trans 1,2-DCE = trace.

Mar 1985 --

In order to compensate for water shortages caused by well closures in TT, Camp Lejeune prepares to construct an 8" auxiliary water line from the Holcomb Blvd. water treatment plant to TT.

11 Mar 1985 --

Camp Lejeune and State of North Carolina conduct split sample of TT finished water after running TT New Well (TT-23) for a 24 hour period. Results indicate PCE = 6.6 ppb (State sample) and 8.9 ppb (Base sample).

Apr 1985 --

Tarawa Terrace residents are notified by Base Commander, MajGen L.H. Buehl, about contamination of their water systems and informed about water conservation plans that are required as a result of well closures within the Tarawa Terrace system.

Apr 1985 --

North Carolina Department of Environmental Management begins investigation of ABC Cleaners as a potential source of VOCs in the TT wells.

22-29 Apr 1985 --

TT-23 was reopened for three 7 hour cycles to avoid system shutdown. On each occasion, VOC analyses of TT finished water indicated concentrations less than 10 ppb.

May 1985 --

Camp Lejeune issues a press release announcing the water contamination problem and explaining the steps being taken to restore water services to the effected base residents. Jacksonville Daily News and Wilmington Morning Star print stories on the situation May 11 and 12.

Jun 1985 - Holcomb Boulevard water distribution auxiliary line to Tarawa Terrace is completed. Water restrictions in TT are lifted.

Jul 1985 --

Construction to expand the Holcomb Blvd. water treatment plant from 2 MGD to 5 MGD begins

Jul 1985 –

VOC testing conducted at TT and HP Plants; no VOCs detected in treated water.

Nov 1985 –

Laboratory analyses of TT wells TT-26, TT-23 (New Well), and TT-25 indicated continued contamination in closed wells TT-26 and TT-23. Active well TT-25 exhibited trace amounts of PCE (<1 ppb). No VOCs were detected in the finished water from the TT water treatment plant.

1986 –

The Department of Navy's Installation Restoration (IR) Program is initiated following the enactment of the Superfund Amendments and Reauthorization Act (SARA) legislation. The IR Program replaced the NACIP program.

Mar 1987 –

Holcomb Boulevard plant expansion is completed. Tarawa Terrace plant is closed. All water to Tarawa Terrace is subsequently provided by Holcomb Boulevard plant.

May 87 –

Site Inspection Report completed by the State of North Carolina on ABC One Hour Cleaners. From the study, the State was able to conclude that ABC One Hour Cleaners was the source of PCE contamination to groundwater in TT.

Jul 1987 –

EPA publishes final rule establishing maximum contaminant levels for TCE, and monitoring requirements for PCE. Monitoring requirements for TCE and PCE become effective on January 1, 1988.

Sep 1988 –

North Carolina Department of Natural Resources and Community Development established its first state standards for monitoring requirements of TCE and PCE in ground water.

4 Oct 1989 –

MCB, Camp Lejeune is placed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List.

1991 –

ATSDR makes first site visit to Camp Lejeune as part its statutory duty to conduct a public health assessment. Marine Corps provides information and assistance for the duration.

Feb 1991 –

A Federal Facilities Agreement (FFA) is signed by the USEPA, Region IV, North Carolina Department of Environment, Health, and Natural Resources (now NC DENR), and the Department of Navy. The FFA provides a procedural framework for the investigation, remediation, and monitoring of remedial actions in accordance with CERCLA and relevant USEPA remediation policy.

Sep 1993 –

A Record of Decision (ROD) is signed for Operable Unit 2, IR Sites 6, 9, and 82, Piney Green Road VOC Area, which specifies a pump and treat system as the selected remedy for contaminated groundwater.

1994 –

A Record of Decision is signed for Operable Unit 1, IR Site 78, Hadnot Point Industrial Area, which specifies pump and treat systems as the selected remedy for the two areas of groundwater contamination.

1997 --

ATSDR publishes final Public Health Assessment for Camp Lejeune. The Public Health Assessment recommended a follow-on study of cancer in children that may have been exposed to VOCs during their mother's pregnancy.

1998 --

ATSDR publishes report entitled "Volatile Organic Compounds in Drinking Water and Adverse Pregnancy Outcomes" that discusses possible associations between drinking water at Camp Lejeune and the size and weight of infants born to parents that lived in Base Family Housing
17 Sep 99 --

ATSDR sends letters out to previous residents of Camp Lejeune who met criteria for an established survey. Survey participants were identified through health and housing records. The Marine Corps cooperated with ATSDR to identify and build a database of former Camp Lejeune residents who met the criteria for the survey.

Jan 2000 --

Camp Lejeune holds an open house with base residents and Jacksonville community to discuss issues pertaining to the contaminated water previously discovered aboard the base.

15 Aug 2000 --

Headquarters Marine Corps in Washington sends a message to all Marines worldwide in an effort to reach potential ATSDR survey participants. Articles are published in numerous base newspapers including the Quantico Sentry, Camp Lejeune Globe and Camp Pendleton Scout, which have a large retired military readership. A number of other publications also publish information contained in this message.

12 Sep 2000 --

Camp Lejeune solicits participants for the ATSDR survey by sending press release to military base publications

01 Nov 2000 --

Headquarters Marine Corps holds a press briefing at the Pentagon to ask media to assist in helping the Marine Corps and ATSDR to reach survey participants. Number of completed surveys stands at approximately 6500.

25 Jan 2001 --

Headquarters Marine Corps sends a second message to all Marines worldwide in an effort to ensure all potential ATSDR survey participants are reached.

01 Feb 2001 --

Regional Media Outreach efforts begin. (February 01-09: East Region States, February 19-23: MidEast States.)

05 Mar 2001 --

Regional Media Outreach efforts continue. (March 05-09: Mid-West States, March 19-23 West States.)

To date media outreach efforts include:

- o TV Stations - 1027 outlets nationwide
- o Daily Newspapers - 1373 outlets nationwide
- o Weekly Newspapers - 1171 outlets nationwide
- o Total: 3571 media outlets contacted nationwide

16 Mar 2001 --

Headquarters Marine Corps receives additional records from the Camp Lejeune Naval Hospital in an effort to locate potential survey participants. Information forwarded to ATSDR and for use in locating additional survey participants.

Apr 2001 --

Headquarters Marine Corps ensures that all recruiting stations nationwide have current information for inquiries about the health survey. Headquarters Marine Corps requests approval from Department of Defense to release social security numbers of potential survey participants to ATSDR.

July 2001 --

Headquarters Marine Corps receives approval from DoD for limited release of social security numbers to ATSDR in order to support ATSDR's survey participant location efforts.

Aug-Oct. 2001 --

MCB Quantico conducts extensive data searches to locate contact information for names of potential survey participants provided to Headquarters Marine Corps by ATSDR. Search produces information on 1623 additional survey participants. Information forwarded to ATSDR.

1 Nov 2001 --

Number of completed surveys reaches 12,000.