

Lab #: 802165 Job #: 48607 IS-65777 Co. Job#:
Sample Name: MPC-WS-1 Co. Lab#:
Company: EERC - Energy & Environmental Research
API/Well:
Container: Plastic Bottle
Field/Site Name: NDCS
Location: Center, ND
Formation/Depth:
Sampling Point:
Date Sampled: 8/11/2021 15:00 Date Received: 8/26/2021 Date Reported: 10/04/2021

δ D of water ----- -116.3 ‰ relative to VSMOW
 δ^{18} O of water ----- -14.53 ‰ relative to VSMOW
Tritium content of water ----- 2.35 ± 0.23 TU
 δ^{13} C of DIC ----- -11.3 ‰ relative to VPDB
 14 C content of DIC ----- 64.3 ± 0.2 percent modern carbon
 δ^{15} N of nitrate ----- na
 δ^{18} O of nitrate ----- na
 δ^{34} S of sulfate ----- na
 δ^{18} O of sulfate ----- na
Vacuum Distilled? * ----- Yes

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 802166 Job #: 48607 IS-65777 Co. Job#:
Sample Name: MPC-WS-1 DUP Co. Lab#:
Company: EERC - Energy & Environmental Research
API/Well:
Container: Plastic Bottle
Field/Site Name: NDCS
Location: Center, ND
Formation/Depth:
Sampling Point:
Date Sampled: 8/11/2021 15:00 Date Received: 8/26/2021 Date Reported: 10/04/2021

δ D of water ----- -124.6 ‰ relative to VSMOW
 δ^{18} O of water ----- -15.57 ‰ relative to VSMOW
Tritium content of water ----- 2.38 ± 0.30 TU
 δ^{13} C of DIC ----- -11.4 ‰ relative to VPDB
 14 C content of DIC ----- 64.2 ± 0.2 percent modern carbon
 δ^{15} N of nitrate ----- na
 δ^{18} O of nitrate ----- na
 δ^{34} S of sulfate ----- na
 δ^{18} O of sulfate ----- na
Vacuum Distilled? * ----- Yes

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 802167 Job #: 48607 IS-65777 Co. Job#:
Sample Name: W289 Co. Lab#:
Company: EERC - Energy & Environmental Research
API/Well:
Container: Plastic Bottle
Field/Site Name: NDCS
Location: Center, ND
Formation/Depth:
Sampling Point:
Date Sampled: 8/11/2021 17:00 Date Received: 8/26/2021 Date Reported: 10/04/2021

δ D of water ----- -123.5 ‰ relative to VSMOW
 δ^{18} O of water ----- -16.19 ‰ relative to VSMOW
Tritium content of water ----- < 0.73 TU
 δ^{13} C of DIC ----- -8.6 ‰ relative to VPDB
 14 C content of DIC ----- 11.2 ± 0.1 percent modern carbon
 δ^{15} N of nitrate ----- na
 δ^{18} O of nitrate ----- na
 δ^{34} S of sulfate ----- na
 δ^{18} O of sulfate ----- na
Vacuum Distilled? * ----- Yes

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 802168 Job #: 48607 IS-65777 Co. Job#:
Sample Name: W510 Co. Lab#:
Company: EERC - Energy & Environmental Research
API/Well:
Container: Plastic Bottle
Field/Site Name: NDCS
Location: Center, ND
Formation/Depth:
Sampling Point:
Date Sampled: 8/11/2021 19:00 Date Received: 8/26/2021 Date Reported: 10/04/2021

δD of water ----- -127.9 ‰ relative to VSMOW
 $\delta^{18}O$ of water ----- -16.53 ‰ relative to VSMOW
Tritium content of water ----- < 0.45 TU
 $\delta^{13}C$ of DIC ----- -16.0 ‰ relative to VPDB
 ^{14}C content of DIC ----- 0.8 ± 0.0 percent modern carbon
 $\delta^{15}N$ of nitrate ----- na
 $\delta^{18}O$ of nitrate ----- na
 $\delta^{34}S$ of sulfate ----- na
 $\delta^{18}O$ of sulfate ----- na
Vacuum Distilled? * ----- Yes

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 802169 Job #: 48607 IS-65777 Co. Job#:
Sample Name: W269 Co. Lab#:
Company: EERC - Energy & Environmental Research
API/Well:
Container: Plastic Bottle
Field/Site Name: NDCS
Location: Center, ND
Formation/Depth:
Sampling Point:
Date Sampled: 8/12/2021 10:30 Date Received: 8/26/2021 Date Reported: 10/04/2021

δ D of water ----- -119.6 ‰ relative to VSMOW
 δ^{18} O of water ----- -15.72 ‰ relative to VSMOW
Tritium content of water ----- 1.80 ± 0.23 TU
 δ^{13} C of DIC ----- -10.6 ‰ relative to VPDB
 14 C content of DIC ----- 65.5 ± 0.2 percent modern carbon
 δ^{15} N of nitrate ----- na
 δ^{18} O of nitrate ----- na
 δ^{34} S of sulfate ----- na
 δ^{18} O of sulfate ----- na
Vacuum Distilled? * ----- Yes

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 802170 Job #: 48607 IS-65777 Co. Job#:
Sample Name: W217 Co. Lab#:
Company: EERC - Energy & Environmental Research
API/Well:
Container: Plastic Bottle
Field/Site Name: NDCS
Location: Center, ND
Formation/Depth:
Sampling Point:
Date Sampled: 8/12/2021 14:30 Date Received: 8/26/2021 Date Reported: 10/04/2021

δD of water ----- -116.2 ‰ relative to VSMOW

$\delta^{18}O$ of water ----- -14.64 ‰ relative to VSMOW

Tritium content of water ----- < 0.54 TU

$\delta^{13}C$ of DIC ----- -8.0 ‰ relative to VPDB

^{14}C content of DIC ----- < 0.4 percent modern carbon

$\delta^{15}N$ of nitrate ----- na

$\delta^{18}O$ of nitrate ----- na

$\delta^{34}S$ of sulfate ----- na

$\delta^{18}O$ of sulfate ----- na

Vacuum Distilled? * ----- Yes

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 802171 Job #: 48607 IS-65777 Co. Job#:
Sample Name: W1686 Co. Lab#:
Company: EERC - Energy & Environmental Research
API/Well:
Container: Plastic Bottle
Field/Site Name: NDCS
Location: Center, ND
Formation/Depth:
Sampling Point:
Date Sampled: 8/12/2021 15:30 Date Received: 8/26/2021 Date Reported: 10/04/2021

δ D of water ----- -120.5 ‰ relative to VSMOW
 δ^{18} O of water ----- -15.99 ‰ relative to VSMOW
Tritium content of water ----- 3.59 ± 0.28 TU
 δ^{13} C of DIC ----- -11.5 ‰ relative to VPDB
 14 C content of DIC ----- 52.9 ± 0.2 percent modern carbon
 δ^{15} N of nitrate ----- na
 δ^{18} O of nitrate ----- na
 δ^{34} S of sulfate ----- na
 δ^{18} O of sulfate ----- na
Vacuum Distilled? * ----- Yes

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 802172 Job #: 48607 IS-65777 Co. Job#:
Sample Name: W471 Co. Lab#:
Company: EERC - Energy & Environmental Research
API/Well:
Container: Plastic Bottle
Field/Site Name: NDCS
Location: Center, ND
Formation/Depth:
Sampling Point:
Date Sampled: 8/12/2021 17:00 Date Received: 8/26/2021 Date Reported: 10/04/2021

δD of water ----- -119.0 ‰ relative to VSMOW

$\delta^{18}O$ of water ----- -15.20 ‰ relative to VSMOW

Tritium content of water ----- < 0.71 TU

$\delta^{13}C$ of DIC ----- -11.6 ‰ relative to VPDB

^{14}C content of DIC ----- < 0.4 percent modern carbon

$\delta^{15}N$ of nitrate ----- na

$\delta^{18}O$ of nitrate ----- na

$\delta^{34}S$ of sulfate ----- na

$\delta^{18}O$ of sulfate ----- na

Vacuum Distilled? * ----- Yes

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 802173 Job #: 48607 IS-65777 Co. Job#:
Sample Name: MPC-WS-2 Co. Lab#:
Company: EERC - Energy & Environmental Research
API/Well:
Container: Plastic Bottle
Field/Site Name: NDCS
Location: Center, ND
Formation/Depth:
Sampling Point:
Date Sampled: 8/13/2021 8:30 Date Received: 8/26/2021 Date Reported: 10/04/2021

δD of water ----- -119.4 ‰ relative to VSMOW
 $\delta^{18}O$ of water ----- -15.01 ‰ relative to VSMOW
Tritium content of water ----- 3.57 ± 0.39 TU
 $\delta^{13}C$ of DIC ----- -10.1 ‰ relative to VPDB
 ^{14}C content of DIC ----- 54.8 ± 0.2 percent modern carbon
 $\delta^{15}N$ of nitrate ----- na
 $\delta^{18}O$ of nitrate ----- na
 $\delta^{34}S$ of sulfate ----- na
 $\delta^{18}O$ of sulfate ----- na
Vacuum Distilled? * ----- Yes

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water