GW - 21

REPORTS

YEAR(S):

1991

Marathon Oil Company

Mid-Continent Region
Production United States

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

September 11, 1991

David G. Boyer, Hydrogeologist
Environmental Bureau Chief
State of New Mexico
Oil Conservation Division
P. O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

Al Collar
Hazardous Materials Coordinator
Department of Interior
Bureau of Land Management
P. O. Box 1397
Roswell, New Mexico 88202

Gentlemen:

This letter is intended as a follow-up to our telephone conversation on the morning of September 9, 1991. In those conversations approval was requested and subsequently granted to drill an additional delineation well in the Indian Basin area at a location of S3200/W000. A archeological survey had already been completed, and indicated that there were no finds in this area. The procedures utilized in drilling the previous bedrock wells will be utilized in drilling this well.

We will keep you informed of the results obtained from drilling this well. Should you have any questions, please contact me.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

cc: J. L. Benson
A. R. Kukla
R. F. Unger

Offsite
Water Analyses

Marathon

Water Analyses

Used MOC #1 & 2

Water Analyses Locations

Site #	Location	Sent to
#1.	Lyman's Well	Lyman
2.	Upper Indian Hills Spring West	Riebelle
3.	Lower Indian Hills Spring	"
4.	Riebelle Well	"
5.	Arroyo Spring Feeding Surface Waters	Riebelle, Gregory
6.	Upper Indian Hills Spring East	Riebelle
7.	Marathon (MOC) #1	Marathon
8.	Marathon (MOC) #2	"
9.	Lee Water Tank	Lee
10.	Howell Water Well	Howell
11.	Howell Windmill	Howell

Misc

Rocky Arroyo - Runoff

" " Backwater - Runoff

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

October 21, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

RE: OCD WATER WELL ANALYSIS

Dear Ms. Lyman:

On July 29, representatives of the New Mexico Oil Conservation Division (OCD) and Marathon Oil sampled your water well to determine if contamination may have occurred as a result of the leak from a flow line in Marathon's Indian Basin Field. Samples taken by OCD were analyzed for hydrocarbons, solvents, heavy metals and general water chemistry at our contract laboratory, ANA-LAB, in Kilgore, Texas. The sample analyses have been received and are attached.

The results of the sampling show that no hydrocarbons or abnormally high levels of inorganic constituents are present. The water can be characterized as a calcium-sulfate water whereas the water lost in the pipeline break is best described as a sodium-chloride water mixed with hydrocarbons. I enclose a list of water quality standards compiled by the NM Environment Department so that you can compare your results.

If you have any questions about the analyses or wish further information, please contact Bill Olson at 827-5812.

Sincerely,

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

Attachment

cc : OCD Artesia District Office

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

October 14, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water sample obtained from your well on September 30, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8526.

Sincerely,

Robert F. Unger
Production Manager

RFU/SAP/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

October 3, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on September 16, 1991 and September 24, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

October 2, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on September 3, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

September 19, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on September 9, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

September 10, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on August 16, 1991, August 17, 1991, August 18, 1991, August 20, 1991, August 21, 1991, August 22, 1991 and Augusrt 26, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Please note that at your specific request, the results are no longer being sent to you by registered mail. Plans are to continue sending you analytical results by ordinary mail in the future, unless you indicate otherwise.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 28, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on August 19, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 725

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 26, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on August 14, 1991, and August 15, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

B.A. Pohler for A.J.K.

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. C. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 722

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 20, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on August 8, 1991, August, 9, 1991, August 10, 1991, August 11, 1991, August 12, 1991, and August 13, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 721

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 16, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on August 6, 1991, and August 7, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 717

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 13, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on August 2, 1991, August 3, 1991, August 4, 1991 and August 5, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 716

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 8, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on July 31, 1991, and August 1, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 712

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 5, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on July 26, 1991, July 27, 1991, July 28, 1991, July 29, 1991 and July 30, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 709

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 31, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on July 24, 1991, and July 25, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 706

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 29, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on July 16, 1991, July 20, 1991, July 21, 1991, July 22, 1991, and July 23, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 705

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 15, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on July 8, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 699

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 10, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on June 29, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 697

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 2, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 87504

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on June 3, 1991 and June 24, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 690

Mid-Continent Region
Production United States

OIL CONSERV[illegible]ON DIVISION
RE[illegible]VED

'91 JUL 1 AM 9:51

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

June 27, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 87504

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on May 20, 1991 and May 27, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present. You may note that the attached reports contain results for numerous other parameters. The Environmental Bureau of the New Mexico Oil Conservation Division requested that this one-time analyses be conducted to appropriately characterize the water. The results indicate that your water is typical, as compared to other waters in this area.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 686

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

June 26, 1991

Ms. Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 87504

Re: Water Well Analysis

Dear Ms. Lyman:

Final analytical results from the water samples obtained from your well on June 11, 1991, and June 17, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for these parameters as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 682

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

May 14, 1991

Patricia Schaefer Lyman
Queen Route
Carlsbad, New Mexico 88220

Re: Freshwater Analysis

Dear Ms. Lyman:

As discussed by telephone, no hydrocarbons or abnormally high chloride concentrations were found to exist within the freshwater sample obtained from your water well on April 22. The results of this analysis are attached.

For your information, the leak that occurred in the Indian Basin Field resulted in condensate and produced water being released. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analysis of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analysis utilizing a procedure specifically approved for drinking water, as specified by the EPA. The tests were designed to evaluate potential contamination of your water from the released fluids described above. The results of these tests indicate your water to be well within standards established by the EPA for drinking water.

We will test your water weekly over the near term and continue to report results by telephone, as well as by written correspondence including copies of laboratory analysis. In the meantime, should you have any questions, feel free to call me collect at (915) 687-8542.

Very truly yours,

T. N. Tipton
Operations Superintendent

TNT;nrt/09191

cc: J. L. Benson
A. J. Kavran
R. F. Unger
D. L. Mannus (BLM-Carlsbad)
D. G. Boyer (NMOCD-Santa Fe)

Lyman
Water Well

"CONFIDENTIAL BUSINESS INFORMATION"

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CORE LABORATORIES

LABORATORY TESTS RESULTS
10/09/91

JOB NUMBER: 911864 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 09/30/91
TIME SAMPLED.....: 12:00
WORK DESCRIPTION...: 1 @ LYMAN WELL

LABORATORY I.D...: 911864-0001
DATE RECEIVED....: 10/04/91
TIME RECEIVED....: 14:12
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH
Chloride (Unfilt.)	11.3	0.5	mg/L	325.2 (1)	10/07/91	MW
8020 - AROMATIC VOLATILE ORGANICS		1		8020 (2)	10/07/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Rogers

1300 South Potomac, Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
10/01/91

JOB NUMBER: 911797 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: 32-03-166 INDIAN BASIN
DATE SAMPLED.....: 09/24/91
TIME SAMPLED.....: 08:50
WORK DESCRIPTION...: 1

LYMAN WELL

LABORATORY I.D...: 911797-0001
DATE RECEIVED....: 09/26/91
TIME RECEIVED....: 15:40
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	10.6	0.5	mg/L	325.2 (1)	09/27/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/28/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY Linda L. Barbera

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LABORATORY TESTS RESULTS
09/30/91

JOB NUMBER: 911725 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-164 INDIAN BASIN
DATE SAMPLED.....: 09/16/91
TIME SAMPLED.....: 08:57
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911725-0003
DATE RECEIVED....: 09/17/91
TIME RECEIVED....: 11:45
REMARKS.....:

Lyman Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TEC
Chloride (Unfilt.)	11.1	0.5	mg/L	325.2 (1)	09/24/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/20/91	MS
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Hayes

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CORE LABORATORIES

LABORATORY TESTS RESULTS
09/20/91

JOB NUMBER: 911646 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 09/03/91
TIME SAMPLED.....: 13:40
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911646-0005
DATE RECEIVED....: 09/04/91
TIME RECEIVED....: 15:30
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	12.1	0.5	mg/L	325.2 (1)	09/05/91	MW
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/05/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Morgan

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LABORATORY TESTS RESULTS
09/13/91

JOB NUMBER: 911689 CUSTOMER: MARATHON OIL COMPANY ATTN: DAVID LOUCH

CLIENT I.D.....: 32-03-144 IBGP PIPELINE
DATE SAMPLED.....: 09/09/91
TIME SAMPLED.....: 10:36
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911689-0001
DATE RECEIVED....: 09/11/91
TIME RECEIVED....: 15:25
REMARKS.....:

LYMAN Water Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	12.7	0.5	mg/L	325.2 (1)	09/12/91	I
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/12/91	MI
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Naggar

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LABORATORY TESTS RESULTS
08/30/91

JOB NUMBER: 911616 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/26/91
TIME SAMPLED.....: 14:55
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911616-0001
DATE RECEIVED....: 08/28/91
TIME RECEIVED....: 15:26
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TI
Chloride (Unfilt.)	12.4	0.5	mg/L	325.2 (1)	08/29/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/29/91	
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Hoffer

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LABORATORY TESTS RESULTS
08/28/91

JOB NUMBER: 911589 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/22/91
TIME SAMPLED.....: 09:40
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911589-0005
DATE RECEIVED....: 08/23/91
TIME RECEIVED....: 16:35
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	12.7	0.5	mg/L	325.2 (1)	08/26/91	C
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/26/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Naggar

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LABORATORY TESTS RESULTS
08/28/91

JOB NUMBER: 911581 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/21/91
TIME SAMPLED.....: 10:40
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911581-0001
DATE RECEIVED....: 08/22/91
TIME RECEIVED....: 15:50
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	17.9	0.5	mg/L	325.2 (1)	08/23/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/26/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Naffziger

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LABORATORY TESTS RESULTS
08/28/91

JOB NUMBER: 911589 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/20/91
TIME SAMPLED.....: 09:03
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911589-0004
DATE RECEIVED....: 08/23/91
TIME RECEIVED....: 16:35
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	11.5	0.5	mg/L	325.2 (1)	08/26/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/26/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen G. Pfeiffer

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/23/91

JOB NUMBER: 911575 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/19/91
TIME SAMPLED.....: 15:17
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911575-0001
DATE RECEIVED....: 08/21/91
TIME RECEIVED....: 16:06
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TI
Chloride (Unfilt.)	13.5	0.5	mg/L	325.2 (1)	08/21/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/22/91	
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Nafziger

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/28/91

JOB NUMBER: 911589 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/18/91
TIME SAMPLED.....: 10:51
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911589-0003
DATE RECEIVED....: 08/23/91
TIME RECEIVED....: 16:35
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	12.6	0.5	mg/L	325.2 (1)	08/26/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/27/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Hoffer

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/28/91

JOB NUMBER: 911589 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/17/91
TIME SAMPLED.....: 16:30
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911589-0002
DATE RECEIVED....: 08/23/91
TIME RECEIVED....: 16:35
REMARKS.....: BUBBLE IN 1 VOA-CL ONLY

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	12.0	0.5	mg/L	325.2 (1)	08/26/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/26/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Kaffger

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Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Litton Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/28/91

JOB NUMBER: 911589 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/16/91
TIME SAMPLED.....: 15:30
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911589-0001
DATE RECEIVED....: 08/23/91
TIME RECEIVED....: 16:35
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	12.5	0.5	mg/L	325.2 (1)	08/26/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/26/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Tighe

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Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/20/91

JOB NUMBER: 911569 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-05-144 INDIAN BASIN
DATE SAMPLED.....: 08/15/91
TIME SAMPLED.....: 09:00
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911569-0001
DATE RECEIVED....: 08/16/91
TIME RECEIVED....: 14:00
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	12.2	0.5	mg/L	325.2 (1)	08/19/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/19/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Barbee

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PAGE: 1

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/20/91

JOB NUMBER: 911540 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-146 INDIAN BASIN
DATE SAMPLED.....: 08/14/91
TIME SAMPLED.....: 09:11
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911540-0001
DATE RECEIVED....: 08/15/91
TIME RECEIVED....: 14:10
REMARKS.....:1

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH#
Chloride (Unfilt.)	11.8	0.5	mg/L	325.2 (1)	08/19/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/15/91	PCM
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Barbour

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Aurora, CO 80012
(303) 751-1780

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Unit of Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/16/91

JOB NUMBER: 911530 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/13/91
TIME SAMPLED.....: 09:20
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911530-0001
DATE RECEIVED....: 08/14/91
TIME RECEIVED....: 13:25
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	12.1	0.5	mg/L	325.2 (1)	08/15/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/15/91	PCM
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda T. Burkes

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Aurora, CO 80012
(303) 751-1780

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/16/91

JOB NUMBER: 911529 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/12/91
TIME SAMPLED.....: 14:49
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911529-0001
DATE RECEIVED....: 08/14/91
TIME RECEIVED....: 13:25
REMARKS.....: BUBBLE IN 1 VOC- CL ONLY

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	12.5	0.5	mg/L	325.2 (1)	08/15/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/15/91	PCM
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY Linda T. Benbow

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LABORATORY TESTS RESULTS
08/15/91

JOB NUMBER: 911519 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/11/91
TIME SAMPLED.....: 07:30
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911519-0003
DATE RECEIVED....: 08/13/91
TIME RECEIVED....: 16:40
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	13.7	0.5	mg/L	325.2 (1)	08/15/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/14/91	PCM
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burbas

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LABORATORY TESTS RESULTS
08/15/91

JOB NUMBER: 911519 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/10/91
TIME SAMPLED.....: 07:53
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911519-0002
DATE RECEIVED....: 08/13/91
TIME RECEIVED....: 16:40
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	13.6	0.5	mg/L	325.2 (1)	08/15/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/14/91	PCM
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda F. Burkes

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LABORATORY TESTS RESULTS
08/15/91

JOB NUMBER: 911519 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/09/91
TIME SAMPLED.....: 07:42
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911519-0001
DATE RECEIVED....: 08/13/91
TIME RECEIVED....: 16:40
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	13.6	0.5	mg/L	325.2 (1)	08/15/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/14/91	PCM
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda T. Burbus

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LABORATORY TESTS RESULTS
08/15/91

JOB NUMBER: 911506 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/08/91
TIME SAMPLED.....: 08:42
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911506-0001
DATE RECEIVED....: 08/09/91
TIME RECEIVED....: 15:45
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	13.2	0.5	mg/L	325.2 (1)	08/12/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/14/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burkus

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LABORATORY TESTS RESULTS
08/12/91

JOB NUMBER: 911494 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/07/91
TIME SAMPLED.....: 07:20
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911494-0002
DATE RECEIVED....: 08/08/91
TIME RECEIVED....: 16:15
REMARKS.....:

Lyman Water Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	13.3	0.5	mg/L	325.2 (1)	08/12/91	C
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/09/91	P
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda I. Benkus

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LABORATORY TESTS RESULTS
08/12/91

JOB NUMBER: 911494 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/06/91
TIME SAMPLED.....: 07:35
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911494-0001
DATE RECEIVED....: 08/08/91
TIME RECEIVED....: 16:15
REMARKS.....:

Lyman Water Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	13.2	0.5	mg/L	325.2 (1)	08/12/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/09/91	MI
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Bunkers

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LABORATORY TESTS RESULTS
08/08/91

JOB NUMBER: 911477 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/05/91
TIME SAMPLED.....: 09:01
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911477-0004
DATE RECEIVED....: 08/06/91
TIME RECEIVED....: 13:55
REMARKS.....:

Lyman Water Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	13.1	0.5	mg/L	325.2 (1)	08/08/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/07/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen G. Nafziger

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LABORATORY TESTS RESULTS
08/08/91

JOB NUMBER: 911477 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/04/91
TIME SAMPLED.....: 11:42
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911477-0003
DATE RECEIVED....: 08/06/91
TIME RECEIVED....: 13:35
REMARKS.....: 1 VOA HAS BUBBLE (CL

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	13.2	0.5	mg/L	325.2 (1)	08/08/9
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/08/9
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen J. Hagen

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SENT BY: AURORA, COLORADO

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LABORATORY TESTS RESULTS
08/08/91

JOB NUMBER: 911477 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-166 INDIAN BASIN
DATE SAMPLED.....: 08/03/91
TIME SAMPLED.....: 07:50
WORK DESCRIPTION...: 1
LYMAN WATER WELL

LABORATORY I.D...: 911477-0002
DATE RECEIVED....: 08/06/91
TIME RECEIVED....: 13:55
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	13.0	0.5	mg/L	325.2 (1)	08/08/
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/07/
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen J. Metzger

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/08/91

JOB NUMBER: 911477 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/02/91
TIME SAMPLED.....: 19:05
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911477-0001
DATE RECEIVED....: 08/06/91
TIME RECEIVED....: 13:55
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	13.0	0.5	mg/L	325.2 (1)	08/08/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/07/91	H
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Hargis

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LABORATORY TESTS RESULTS
08/06/91

JOB NUMBER: 911461 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/01/91
TIME SAMPLED.....: 09:04
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911461-0001
DATE RECEIVED....: 08/02/91
TIME RECEIVED....: 14:00
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	12.2	0.5	mg/L	325.2 (1)	08/05/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/02/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen J. Hagen

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/05/91

JOB NUMBER: 911450 CUSTOMER: MARATHON OIL COMPANY ATTN: M. HIKOR

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/31/91
TIME SAMPLED.....: 09:55
WORK DESCRIPTION...: 1
LYMAN WATER WELL

LABORATORY I.D...: 911450-0001
DATE RECEIVED....: 08/01/91
TIME RECEIVED....: 11:40
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	12.2	0.5	mg/L	325.2 (1)	08/05/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/02/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen J. Mayer

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/02/91

JOB NUMBER: 911436 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-166 INDIAN BASIN
DATE SAMPLED.....: 07/30/91
TIME SAMPLED.....: 08:35
WORK DESCRIPTION...: 1

Lyman Water well

LABORATORY I.D...: 911436-0010
DATE RECEIVED....: 07/31/91
TIME RECEIVED....: 15:15
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	12.8	0.5	mg/L	325.2 (1)	08/01/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/02/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L. Buckles

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LABORATORY TESTS RESULTS
08/02/91

JOB NUMBER: 911436 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-09-144 INDIAN BASIN
DATE SAMPLED.....: 07/29/91
TIME SAMPLED.....: 08:19
WORK DESCRIPTION...: 1

Lyman Water Well

LABORATORY I.D...: 911436-0001
DATE RECEIVED....: 07/31/91
TIME RECEIVED....: 15:19
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TI
Chloride (unfilt.)	12.5	0.5	mg/L	325.2 (1)	08/01/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/01/91	
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L Barbera

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2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

09/11/91

Environmental Bureau NM Oil D.
PO Box 2088
Santa Fe, NM 87504

Sample Identification: Lyman Water Tank
Collected By: Client
Date & Time Taken: 07/29/91 1017
On Site Data: Marathon Indian Basin

Lab Sample Number: 192237 **Received:** 07/31/91 Client: SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	230	mg/l as C	1900	08/13/91	EPA Method 310.1	BW
Boron	<.5	mg/l	1700	08/09/91	EPA Method 212.3	MB
Bromide	8	mg/l	1200	08/16/91	ASTM D3869 vol 11.02	ES
Cation-Anion Balance	16.2/15.6	meq/meq	1600	09/10/91		SK
Carbonate	<.5	mg/l	1600	08/14/91	APHA Method 263	BC
Calulated Total Dissolved Solids	980	ppm	1500	09/06/91	APHA Method 1030F	BP2
Specific Conductance	1000	Micromhos	0030	08/01/91	EPA Method 120.1	SB
Fluoride	1.3	mg/l	1400	08/06/91	EPA Method 340.1	BC
Bicarbonate	230	mg/l	1600	08/14/91	APHA Method 263	BC
Sulfate	450	mg/l	1230	08/14/91	EPA Method 375.4	MB
pH	7.0	SU	0100	08/01/91	EPA Method 150.1	SB
Chloride	20	mg/l	1300	08/12/91	EPA Method 325.3	HG
Silver	<.01	mg/l	1910	08/07/91	EPA Method 6010	GK
Aluminum	<.03	mg/l	1400	08/06/91	EPA Method 6010	GK
Arsenic	<.005	mg/l	1600	08/14/91	EPA Method 206.2	GK
Barium	.02	mg/l	1910	08/07/91	EPA Method 6010	GK

Continued

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Analytical Chemistry • Utility Operations

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Beryllium	<.01	mg/l	1910	08/07/91	EPA Method 6010	GK
Dissolved Calcium	200	mg/l	1400	08/05/91	EPA Method 6010	NT
Cadmium	<.001	mg/l	1300	08/16/91	EPA Method 213.2	GK
Cobolt	<.05	mg/l	1910	08/07/91	EPA Method 6010	GK
Chromium	<.02	mg/l	1910	08/07/91	EPA Method 6010	GK
Copper	<.02	mg/l	1910	08/07/91	EPA Method 6010	GK
Dissolved Iron	<.05	mg/l	1400	08/05/91	EPA Method 6010	NT
Mercury	<.001	mg/l	1730	08/01/91	EPA Method 245.3	MET
Dissolved Potassium	<2	mg/l	1400	08/05/91	EPA Method 6010	NT
Dissolved Magnesium	70	mg/l	1400	08/05/91	EPA Method 6010	NT
Dissolved Manganese	<.01	mg/l	1400	08/05/91	EPA Method 6010	NT
Molybdenum	<.05	mg/l	1910	08/07/91	EPA Method 6010	GK
Dissolved Sodium	10	mg/l	1400	08/05/91	EPA Method 6010	NT
Nickel	<.05	mg/l	1910	08/07/91	EPA Method 6010	GK
Lead	.001	mg/l	1915	08/15/91	EPA Method 239.2	GK
Antimony	<.1	mg/l	1910	08/07/91	EPA Method 6010	GK
Selenium	<.005	mg/l	2030	08/14/91	EPA Method 270.2	GK
Silicon	8.0	mg/l	1350	08/15/91	EPA Method 6010	GDG
Thallium	<.2	mg/l	1350	08/15/91	EPA Method 6010	GDG
Vanadium	<.05	mg/l	1350	08/15/91	EPA Method 6010	GDG
Zinc	<.01	mg/l	1910	08/07/91	EPA Method 6010	GK

Continued

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Analytical Chemistry • Utility Operations

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Acrolein	ND(100)	ug/l	0935	08/13/91	EPA Method 8240	PM
Acrylonitrile	ND(100)	ug/l	0935	08/13/91	EPA Method 8240	PM
Benzene	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Bromoform	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Bromomethane	ND(10)	ug/l	0935	08/13/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Chlorobenzene	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Chloroethane	ND(10)	ug/l	0935	08/13/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10)	ug/l	0935	08/13/91	EPA Method 8240	PM
Chloroform	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Chloromethane	ND(10)	ug/l	0935	08/13/91	EPA Method 8240	PM
Dibromochloromethane	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Bromodichloromethane	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Dichlorodiflouromethane	ND(1.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
1,2-Dichloropropane	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Ethyl benzene	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM

Continued

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Analytical Chemistry • Utility Operations

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Methylene Chloride	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
1,1,2,2-Tetrachloroethane	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Tetrachloroethene	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Toluene	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
1,1,1-Trichloroethane	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Trichloroethene	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Trichlorofluoromethane	ND(10)	ug/l	0935	08/13/91	EPA Method 8240	PM
Vinyl Chloride	ND(10)	ug/l	0935	08/13/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(5.0)	ug/l	0935	08/13/91	EPA Method 8240	PM
Xylenes	ND(10)	ug/l	0935	08/13/91	EPA Method 8240	PM
Benzene	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB
Ethyl benzene	<0.4	ug/l	0800	08/05/91	EPA Method 8020	KB
Toluene	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB
Xylenes	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB

Reported detection limits are EPA suggested practical quantitation limits. Actual limit may vary with matrix.

Quality Assurance for the SET with Sample 192237

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
				Alkalinity					
	Standard	2420	mg/l as C	2358		103	1900	08/13/91	BW
191618	Duplicate	300	mg/l as C	300		100	1900	08/13/91	BW
191618	Spike		mg/l as C			100	1900	08/13/91	BW
				Boron					
	Blank	.000	mg/l				1700	08/09/91	MB

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 192237

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	.51	mg/l	.50		102	1700	08/09/91	MB
191621	Duplicate	<.5	mg/l	<.5		100	1700	08/09/91	MB
				Bromide					
	Standard	100	mg/kg	100		100	1200	08/16/91	ES
192244	Duplicate	55	mg/kg	50		110	1200	08/16/91	ES
				Specific Conductance					
192237	Duplicate	1000	Micromhos	1000		100	0030	08/01/91	SB
192239	Duplicate	800	Micromhos	800		100	0030	08/01/91	SB
192240	Duplicate	810	Micromhos	760		106	0030	08/01/91	SB
				Fluoride					
	Standard	5.0	mg/l	5.0		100	1400	08/06/91	BC
191618	Duplicate	<1	mg/l	<1		100	1400	08/06/91	BC
				Sulfate					
	Standard	92	mg/l	100		108	1230	08/14/91	MB
192324	Duplicate	1300	mg/l	1300		100	1230	08/14/91	MB
192324	Spike		mg/l		100	133	1230	08/14/91	MB
				pH					
	Standard	Calibrate	SU	7.0			0100	08/01/91	SB
	Standard	Calibrate	SU	10.0			0100	08/01/91	SB
	Standard	8.0	SU	8.0		100	0100	08/01/91	SB
192237	Duplicate	7.0	SU	7.0		100	0100	08/01/91	SB
				Chloride					
	Standard	72	mg/l	71		101	1300	08/12/91	HG
192997	Duplicate	16	mg/l	15		106	1300	08/12/91	HG
				Silver					
	Blank	<.01	mg/l				1910	08/07/91	GK
	Standard	.20	mg/l	.20		100	1910	08/07/91	GK
	Standard	1.0	mg/l	1.0		100	1910	08/07/91	GK
192240	Duplicate	<.01	mg/l	<.01		100	1910	08/07/91	GK
192239	Spike		mg/l		1.0	99	1910	08/07/91	GK
				Aluminum					
	Blank	<.03	mg/l				1400	08/06/91	GK
	Standard	1.0	mg/l	1.0		100	1400	08/06/91	GK
	Standard	5.1	mg/l	5.0		102	1400	08/06/91	GK
192240	Duplicate	<.03	mg/l	<.03		100	1400	08/06/91	GK
192239	Spike		mg/l		2.0	94	1400	08/06/91	GK
				Arsenic					
	Blank	<.005	mg/l				1600	08/14/91	GK
	Standard	.099	mg/l	.100		101	1600	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
192240	Spike		mg/l		.100	91	1600	08/14/91	GK
				Barium					
	Blank	<.01	mg/l				1910	08/07/91	GK

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 192237

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	3.9	mg/l	4.0		103	1910	08/07/91	GK
	Standard	5.2	mg/l	5.0		104	1910	08/07/91	GK
192240	Duplicate	.04	mg/l	.04		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	99	1910	08/07/91	GK
				Beryllium					
	Blank	<.01	mg/l				1910	08/07/91	GK
	Standard	.09	mg/l	.10		111	1910	08/07/91	GK
	Standard	2.0	mg/l	2.0		100	1910	08/07/91	GK
192240	Duplicate	<.01	mg/l	<.01		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	98	1910	08/07/91	GK
				Dissolved Calcium					
	Blank	.16	mg/l				1400	08/05/91	NT
	Standard	10	mg/l	10		100	1400	08/05/91	NT
	Standard	46	mg/l	50		108	1400	08/05/91	NT
192237	Duplicate	200	mg/l	200		100	1400	08/05/91	NT
192240	Spike		mg/l		18	93	1400	08/05/91	NT
				Cadmium					
	Blank	<.001	mg/l				1300	08/16/91	GK
	Standard	.002	mg/l	.002		100	1300	08/16/91	GK
191621	Duplicate	<.001	mg/l	<.001		100	1300	08/16/91	GK
				Cobolt					
	Blank	<.05	mg/l				1910	08/07/91	GK
	Standard	.97	mg/l	1.0		103	1910	08/07/91	GK
	Standard	4.6	mg/l	5.0		108	1910	08/07/91	GK
192240	Duplicate	<.05	mg/l	<.05		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	98	1910	08/07/91	GK
				Chromium					
	Blank	<.02	mg/l				1910	08/07/91	GK
	Standard	.20	mg/l	.20		100	1910	08/07/91	GK
	Standard	4.8	mg/l	5.0		104	1910	08/07/91	GK
192240	Duplicate	<.02	mg/l	<.02		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	85	1910	08/07/91	GK
				Copper					
	Blank	<.02	mg/l				1910	08/07/91	GK
	Standard	.48	mg/l	.50		104	1910	08/07/91	GK
	Standard	4.9	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.02	mg/l	<.02		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	96	1910	08/07/91	GK
				Dissolved Iron					
	Blank	<.05	mg/l				1400	08/05/91	NT
	Standard	2.0	mg/l	2.0		100	1400	08/05/91	NT
	Standard	5.2	mg/l	5.0		104	1400	08/05/91	NT
192237	Duplicate	<.05	mg/l	<.05		100	1400	08/05/91	NT
192240	Spike		ag/l		3.7	106	1400	08/05/91	NT
				Dissolved Potassium					

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Quality Assurance for the SET with Sample 192237

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	<2	mg/l				1400	08/05/91	NT
	Standard	100	mg/l	100		100	1400	08/05/91	NT
	Standard	49	mg/l	50		102	1400	08/05/91	NT
192237	Duplicate	<2	mg/l	<2		100	1400	08/05/91	NT
192240	Spike		mg/l		18	110	1400	08/05/91	NT
				Dissolved Magnesium					
	Blank	<.01	mg/l				1400	08/05/91	NT
	Standard	99	mg/l	100		101	1400	08/05/91	NT
	Standard	50	mg/l	50		100	1400	08/05/91	NT
192237	Duplicate	69	mg/l	70		101	1400	08/05/91	NT
192240	Spike		mg/l		18	95	1400	08/05/91	NT
				Dissolved Manganese					
	Blank	<.01	mg/l				1400	08/05/91	NT
	Standard	.30	mg/l	.30		100	1400	08/05/91	NT
	Standard	5.2	mg/l	5.0		104	1400	08/05/91	NT
192237	Duplicate	<.01	mg/l	<.01		100	1400	08/05/91	NT
192240	Spike		mg/l		18	106	1400	08/05/91	NT
				Molybdenum					
	Blank	<.05	mg/l				1910	08/07/91	GK
	Standard	5.4	mg/l	5.0		108	1910	08/07/91	GK
192240	Duplicate	<.05	mg/l	<.05		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	99	1910	08/07/91	GK
				Dissolved Sodium					
	Blank	3	mg/l				1400	08/05/91	NT
	Standard	100	mg/l	100		100	1400	08/05/91	NT
	Standard	50	mg/l	50		100	1400	08/05/91	NT
192237	Duplicate	10	mg/l	10		100	1400	08/05/91	NT
192240	Spike		mg/l		18	106	1400	08/05/91	NT
				Nickel					
	Blank	<.05	mg/l				1910	08/07/91	GK
	Standard	.80	mg/l	.80		100	1910	08/07/91	GK
	Standard	4.9	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.05	mg/l	<.05		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	97	1910	08/07/91	GK
				Lead					
	Blank	.002	mg/l				1915	08/15/91	GK
	Blank	<.001	mg/l				1915	08/15/91	GK
	Standard	.028	mg/l	.025		111	1915	08/15/91	GK
	Standard	.027	mg/l	.025		108	1915	08/15/91	GK
	Standard	.048	mg/l	.050		104	1915	08/15/91	GK
	Standard	.051	mg/l	.050		102	1915	08/15/91	GK
191621	Duplicate	.004	mg/l	.005		122	1915	08/15/91	GK
193075	Duplicate	.002	mg/l	.001		167	1915	08/15/91	GK
191621	Spike		mg/l		.020	100	1915	08/15/91	GK

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 192237

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
193075	Spike		mg/l		.020	76	1915	08/15/91	GK
				Antimony					
	Blank	<.1	mg/l				1910	08/07/91	GK
	Standard	1.2	mg/l	1.2		100	1910	08/07/91	GK
	Standard	5.1	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.1	mg/l	<.1		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	96	1910	08/07/91	GK
				Selenium					
	Blank	<.005	mg/l				2030	08/14/91	GK
	Standard	.097	mg/l	.100		103	2030	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
192237	Spike		mg/l		.100	108	2030	08/14/91	GK
				Silicon					
	Blank	.4	mg/l				1350	08/15/91	GDG
	Standard	4.9	mg/l	5.0		102	1350	08/15/91	GDG
	Standard	9.6	mg/l	10		104	1350	08/15/91	GDG
192240	Duplicate	8.1	mg/l	7.8		104	1350	08/15/91	GDG
192239	Spike		mg/l		2.0	95	1350	08/15/91	GDG
				Thallium					
	Blank	<.2	mg/l				1350	08/15/91	GDG
	Standard	.95	mg/l	1.0		105	1350	08/15/91	GDG
	Standard	5.2	mg/l	5.0		104	1350	08/15/91	GDG
192240	Duplicate	<.2	mg/l	<.2		100	1350	08/15/91	GDG
192239	Spike		mg/l		2.0	102	1350	08/15/91	GDG
				Vanadium					
	Blank	<.05	mg/l				1350	08/15/91	GDG
	Standard	1.0	mg/l	1.0		100	1350	08/15/91	GDG
	Standard	5.2	mg/l	5.0		104	1350	08/15/91	GDG
192240	Duplicate	<.05	mg/l	<.05		100	1350	08/15/91	GDG
192239	Spike		mg/l		2.0	102	1350	08/15/91	GDG
				Zinc					
	Blank	<.01	mg/l				1910	08/07/91	GK
	Standard	.41	mg/l	.40		102	1910	08/07/91	GK
	Standard	4.9	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.01	mg/l	<.01		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	101	1910	08/07/91	GK
				Benzene					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	115	0800	08/05/91	KB
				Ethyl benzene					
	Blank	<5.0	ug/l				0800	08/05/91	KB

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 192237

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.4	ug/l	<0.4		100	0800	08/05/91	KB
192240	Spike				100	72	0800	08/05/91	KB
				Toluene					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	96	0800	08/05/91	KB
				Xylenes					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	70	0800	08/05/91	KB

BROMOFLUOROBENZENE

Ion Abundance Criteria

m/z	Min %	Max %	Mass	Actual	Status
50	15.0	40.0	95	15.2	PASS
75	30.0	60.0	95	43.0	PASS
95	100.0	---	---	100.0	PASS
96	5.0	9.0	95	5.6	PASS
173	---	2.0	174	0.0	PASS
174	50.0	---	95	97.9	PASS
175	5.0	9.0	174	5.1	PASS
176	95.0	101.0	174	100.0	PASS
177	5.0	9.0	176	5.1	PASS

DUPLICATE

Compound Name	Sample	Duplicate	Difference
Benzene	ND	ND	0%
Chlorobenzene	ND	ND	0%
1,1-Dichloroethene	ND	ND	0%
Toluene	ND	ND	0%
Trichloroethene	ND	ND	0%

SPIKE

Compound Name	Concent.	Sample	Recovery

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Quality Assurance for the SET with Sample 192237

Benzene	100	87.7	88%
1,1-Dichloroethene	100	66.4	66%
Trichloroethene	100	84.0	84%

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/01/91

JOB NUMBER: 911432 CUSTOMER: MARATHON OIL COMPANY ATTN: MS. NIXON

CLIENT I.D.....: 32.03.144 INDIAN BASIN
DATE SAMPLED.....: 07/28/91
TIME SAMPLED.....: 17:30
WORK DESCRIPTION...: 1

Lyman Water Well

LABORATORY I.D...: 911432-0002
DATE RECEIVED....: 07/30/91
TIME RECEIVED....: 15:09
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	12.6	0.5	mg/L	325.2 (1)	08/01/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/31/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda T. Rodkey

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/01/91

JOB NUMBER: 911432 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.144 INDIAN BASIN
DATE SAMPLED.....: 07/26/91
TIME SAMPLED.....: 12:30
WORK DESCRIPTION...: 1

Lyman Water Well

LABORATORY I.D...: 911432-0003
DATE RECEIVED....: 07/30/91
TIME RECEIVED....: 15:03
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	12.5	0.5	mg/L	325.2 (1)	08/01/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/31/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L Benbow

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/01/91

JOB NUMBER: 911432 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.144 INDIAN BASIN
DATE SAMPLED.....: 07/27/91
TIME SAMPLED.....: 13:00
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911432-0001
DATE RECEIVED....: 07/30/91
TIME RECEIVED....: 15:05
REMARKS.....:

Lyman Water Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	12.2	0.9	mg/L	325.2 (1)	08/01/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (8)	07/31/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L. Burbus

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LABORATORY TESTS RESULTS
07/30/91

JOB NUMBER: 911413 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/29/91
TIME SAMPLED.....: 09:45
WORK DESCRIPTION...: #1
LYMAN WATER WELL

LABORATORY I.D...: 911413-0002
DATE RECEIVED....: 07/26/91
TIME RECEIVED....: 13:55
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	12.0	0.5	mg/L	325.2 (1)	07/29/91	MW
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/29/91	NRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY Linda T. Gardner

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LABORATORY TESTS RESULTS
07/30/91

JOB NUMBER: 911413 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/24/91
TIME SAMPLED.....: 13:14
WORK DESCRIPTION...: #1

LYMAN WATER WELL

LABORATORY I.D...: 911413-0001
DATE RECEIVED....: 07/26/91
TIME RECEIVED....: 13:55
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	11.0	0.5	mg/L	325.2 (1)	07/29/91	MW
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/29/91	HRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda T. Benton

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/26/91

JOB NUMBER: 911398 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/23/91
TIME SAMPLED.....: 11:57
WORK DESCRIPTION...: #1

LABORATORY I.D...: 911398-0010
DATE RECEIVED....: 07/24/91
TIME RECEIVED....: 15:15
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TEC
Chloride (Unfilt.)	11.0	0.5	mg/L	325.2 (1)	07/25/91	P
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/25/91	MR
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burton

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LABORATORY TESTS RESULTS
07/26/91

JOB NUMBER: 911398 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/22/91
TIME SAMPLED.....: 14:40
WORK DESCRIPTION...: #1

LABORATORY I.D...: 911398-0001
DATE RECEIVED....: 07/24/91
TIME RECEIVED....: 13:15
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	11.4	0.5	mg/L	325.2 (1)	07/25/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/25/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L. Benson

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/26/91

JOB NUMBER: 911381 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/21/91
TIME SAMPLED.....: 14:15
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911381-0008
DATE RECEIVED....: 07/23/91
TIME RECEIVED....: 13:30
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH
Chloride (Unfilt.)	11.9	0.5	mg/L	325.2 (1)	07/25/91	MW
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/24/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY Lindsay L. Barbee

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LABORATORY TESTS RESULTS
07/26/91

JOB NUMBER: 911381 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/20/91
TIME SAMPLED.....: 17:25
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911381-0007
DATE RECEIVED....: 07/23/91
TIME RECEIVED....: 13:30
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH
Chloride (Unfilt.)	12.0	0.5	mg/L	325.2 (1)	07/25/91	MW
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/24/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda T. Benbow

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/19/91

JOB NUMBER: 911323 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/16/91
TIME SAMPLED.....: 09:39
WORK DESCRIPTION...: #1

LABORATORY I.D...: 911323-0001
DATE RECEIVED....: 07/17/91
TIME RECEIVED....: 13:15
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	12.1	0.5	mg/L	325.2 (1)	07/18/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/18/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Bankers

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LABORATORY TESTS RESULTS
07/12/91

JOB NUMBER: 911259 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/08/91
TIME SAMPLED.....: 14:55
WORK DESCRIPTION...: #1

LABORATORY I.D...: 911259-0001
DATE RECEIVED....: 07/10/91
TIME RECEIVED....: 13:15
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	12.4	0.5	mg/L	325.2 (1)	07/11/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/10/91	MI
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burkus

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LABORATORY TESTS RESULTS
07/08/91

JOB NUMBER: 911228 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 06/29/91
TIME SAMPLED.....: 17:00
WORK DESCRIPTION...: #1

LABORATORY I.D...: 911228-0001
DATE RECEIVED....: 07/03/91
TIME RECEIVED....: 16:20
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	12.3	0.5	mg/L	325.2 (1)	07/08/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/03/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 911153 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 06/24/91
TIME SAMPLED.....: 14:15
WORK DESCRIPTION...: 1

LABORATORY I.D...: 911153-0001
DATE RECEIVED....: 06/26/91
TIME RECEIVED....: 14:52
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	18.5	1	mg/L	325.2 (1)	06/28/91	D
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/27/91	P
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

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LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 911062 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: IBGP PIPELINE LEAK 32-03-144
DATE SAMPLED.....: 06/17/91
TIME SAMPLED.....: 13:29
WORK DESCRIPTION...: 1

LYMAN WATER WELL

LABORATORY I.D...: 911062-0001
DATE RECEIVED....: 06/19/91
TIME RECEIVED....: 12:55
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH
Chloride (Unfilt.)	12.8	0.5	mg/L	325.2 (1)	06/21/91	PJH
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/20/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Doug McWhorter

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LABORATORY TESTS RESULTS
06/17/91

JOB NUMBER: 911022 CUSTOMER: MARATHON OIL COMPANY ATTN: W. DIXON

CLIENT I.D.....: 32.03.166 IBGP PIPELINE LEAK
DATE SAMPLED.....: 06/11/91
TIME SAMPLED.....: 13:30
WORK DESCRIPTION...: #1

LYMAN WATER WELL

LABORATORY I.D...: 911022-0001
DATE RECEIVED....: 06/13/91
TIME RECEIVED....: 16:06
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	13.2	0.5	mg/L	325.2 (1)	06/14/91
Solids, Total Dissolved (TDS)	1090	10	mg/L	160.1 (1)	06/14/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/14/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen J. Nelson

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LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 910948 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.144 IBGP PIPELINE LEAK
DATE SAMPLED.....: 6/03/91
TIME SAMPLED.....: 10:26
WORK DESCRIPTION...: #1

LABORATORY I.D...: 910948-0001
DATE RECEIVED....: 06/05/91
TIME RECEIVED....: 16:11
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE T
Chloride (Unfilt.)	13.2	0.5	mg/L	325.2 (1)	06/06/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/06/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910887 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: 27-98-810 MINERAL ASSAY
DATE SAMPLED.....: 05/27/91
TIME SAMPLED.....: 13:30
WORK DESCRIPTION...: #1

LABORATORY I.D...: 910887-0001
DATE RECEIVED....: 05/29/91
TIME RECEIVED....: 15:22
REMARKS.....:

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Alkalinity, Total (Unfilt.)	231	5	mg/L CaCO3	310.1 (1)	06/03/91
Bicarbonate (Unfilt.)	282	5	mg/L	403 (3)	06/03/91
Carbonate (Unfilt.)	<1	1	mg/L	403 (3)	06/03/91
Chloride (Unfilt.)	13.3	0.5	mg/L	325.2 (1)	05/30/91
Conductivity (Unfilt.)	1270	1	umhos/cm @25dF	120.1 (1)	05/30/91
Hardness, Total (Unfilt.)	828	1	mg/L(as CaCO3)	314A (3)	06/20/91
Nitrogen, Nitrate (Unfilt.)	0.7	0.1	mg/L (as N)	353.2 (1)	06/13/91
pH (Unfilt.)	7.36	0.01	pH Units	150.1 (1)	06/03/91
Solids, Total Dissolved (TDS)	1090	10	mg/L	160.1 (1)	06/06/91
Sulfate (Unfilt.)	549	10	mg/L	375.3 (1)	06/19/91
Calcium, Total (Ca)	216	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Iron, Total (Fe)	0.05	0.03	mg/L	200.7/6010 (1,2)	06/11/91
Magnesium, Total (Mg)	70.1	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Manganese, Total (Mn)	<0.01	0.01	mg/L	200.7/6010 (1,2)	06/11/91
Potassium, Total (K)	1.58	0.01	mg/L	258.1 (1)	06/20/91
Sodium, Total (Na)	16	1	mg/L	200.7/6010 (1,2)	06/11/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/29/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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CORE LABORATORIES

ANALYTICAL REPORT
06/21/91

CUSTOMER: Marathon Oil Company File No.: 910887

CATION/ANION BALANCE

Client Sample I.D..... #1
Remark/Project..... 27-98-810 Mineral Assay
Date/Time Sampled..... 05-27-91/1330
Date/Time Received..... 05-29-91/1522
Laboratory Sample I.D..... 910887-1

LYMAN WATER WELL

PARAMETER	RESULT		UNITS
pH	7.36		pH Units
Conductivity at 25 degrees C	1270		umhos/cm
Alkalinity (as CaCO3)	231		mg/L
Total Disp. Solids (measured)	1090		mg/L
Total Diss. Solids (calculated)	1005		mg/L
		meq/Liter	
Calcium (Ca)	216	10.78	mg/L
Magnesium (Mg)	70.1	5.77	mg/L
Sodium (Na)	14	0.61	mg/L
Potassium (K)	1.58	0.04	mg/L
Total Cations meq/Liter		17.20	
		meq/Liter	
Bicarbonate (HCO3)	282	4.62	mg/L
Carbonate (CO3)	ND(1)	0.00	mg/L
Hydroxide (OH)	ND(1)	0.00	mg/L
Chloride (Cl)	13.3	0.38	mg/L
Sulfate (SO4)	549	11.43	mg/L
Total Anions meq/Liter		16.43	
Cation-Anion Balance (RPD)	4.57 Percent		

ND = NOT DETECTED AT LEVEL SHOWN IN PARENTHESIS

Approved By: Diana McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910852 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27 98 810 MINERAL ASSAY
DATE SAMPLED.....: 05/20/91
TIME SAMPLED.....: 17:45
WORK DESCRIPTION...: 1

LABORATORY I.D...: 910852-0001
DATE RECEIVED....: 05/22/91
TIME RECEIVED....: 16:30
REMARKS.....: SAMPLE TIME DIFFERS FROM COC

LYMAN WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TEC
Alkalinity, Total (Unfilt.)	238	5	mg/L CaCO3	310.1 (1)	05/28/91	KJ
Bicarbonate (Unfilt.)	290	5	mg/L	403 (3)	05/28/91	KJ
Carbonate (Unfilt.)	<1	1	mg/L	403 (3)	05/28/91	KJ
Chloride (Unfilt.)	13.2	0.5	mg/L	325.2 (1)	05/24/91	DA
Conductivity (Unfilt.)	1300	1	umhos/cm @25dF	120.1 (1)	05/24/91	M
Hardness, Total (Unfilt.)	816	1	mg/L(as CaCO3)	314A (3)	06/20/91	TL
Nitrogen, Nitrate (Unfilt.)	0.8	0.1	mg/L (as N)	353.2 (1)	06/11/91	DI
pH (Unfilt.)	7.50	0.01	pH Units	150.1 (1)	05/28/91	K.
Solids, Total Dissolved (TDS)	1060	10	mg/L	160.1 (1)	05/28/91	P.
Sulfate (Unfilt.)	629	10	mg/L	375.2 (1)	06/12/91	DI
Calcium, Total (Ca)	213	0.5	mg/L	200.7/6010 (1,2)	06/11/91	T
Iron, Total (Fe)	<0.03	0.03	mg/L	200.7/6010 (1,2)	06/11/91	T
Magnesium, Total (Mg)	69.1	0.5	mg/L	200.7/6010 (1,2)	06/11/91	T
Manganese, Total (Mn)	<0.01	0.01	mg/L	200.7/6010 (1,2)	06/11/91	T
Potassium, Total (K)	1.65	0.01	mg/L	258.1 (1)	06/20/91	T
Sodium, Total (Na)	16	1	mg/L	200.7/6010 (1,2)	06/11/91	T
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/23/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David J. McWhorter

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CORE LABORATORIES

ANALYTICAL REPORT
06/21/91

CUSTOMER: Marathon Oil Company File No.: 9108852

CATION/ANION BALANCE

Client Sample I.D..... #1
Remark/Project..... 27-98-810 Mineral Assay
Date/Time Sampled..... 05-20-91/1745
Date/Time Received..... 05-22-91/1630
Laboratory Sample I.D..... 910852-1

LYMAN WATER WELL

PARAMETER	RESULT		UNITS
pH	7.50		pH Units
Conductivity at 25 degrees C	1300		umhos/cm
Alkalinity (as CaCO3)	238		mg/L
Total Diss. Solids (measured)	1060		mg/L
Total Diss. Solids (calculated)	1083		mg/L
		meq/Liter	
Calcium (Ca)	213	10.63	mg/L
Magnesium (Mg)	69.1	5.69	mg/L
Sodium (Na)	16	0.70	mg/L
Potassium (K)	1.65	0.04	mg/L
Total Cations meq/Liter		17.05	
		meq/Liter	
Bicarbonate (HCO3)	283	4.64	mg/L
Carbonate (CO3)	ND(1)	0.00	mg/L
Hydroxide (OH)	ND(1)	0.00	mg/L
Chloride (Cl)	13.2	0.37	mg/L
Sulfate (SO4)	629	13.10	mg/L
Total Anions meq/Liter		18.11	
Cation-Anion Balance (RPD)	5.99 Percent		

ND = NOT DETECTED AT LEVEL SHOWN IN PARENTHESIS

Approved By:

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CORE LABORATORIES

LABORATORY TESTS RESULTS
05/07/91

JOB NUMBER: 910678 CUSTOMER: MARATHON OIL COMPANY ATTN: DAVID LOUCH

CLIENT I.D.....: 27 98 810
DATE SAMPLED.....: 04/22/91
TIME SAMPLED.....: 16:45
WORK DESCRIPTION...: 1-W.BIEBELLE WATER SUPPLY [Lyman]

LABORATORY I.D...: 910678-0001
DATE RECEIVED....: 04/23/91
TIME RECEIVED....: 15:27
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
AROMATIC VOLATILE ORGANICS		*1		8240 (2)	04/23/91	D
Benzene	ND	5	ug/L			
Toluene	ND	5	ug/L			
Ethyl Benzene	ND	5	ug/L			
Xylenes	ND	5	ug/L			

APPROVED BY: Ellen J. Mapper

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CORE LABORATORIES

LABORATORY TESTS RESULTS
05/07/91

JOB NUMBER: 910678 CUSTOMER: MARATHON OIL COMPANY ATTN: DAVID LOUCH

CLIENT I.D.....: 27 98 810
DATE SAMPLED.....: 04/22/91
TIME SAMPLED.....: 16:45
WORK DESCRIPTION...: W.BIEBLLE WATER SUPPLY (Lyman)

LABORATORY I.D...: 910678-0002
DATE RECEIVED....: 04/26/91
TIME RECEIVED....: 11:00
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TEC
Chloride (Unfilt.)	15	1	mg/L	325.3 (1)	05/03/91	PJ

APPROVED BY: Ellen J. Nagger

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Biebelle
Correspondence

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

October 21, 1991

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Mr. and Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

RE: OCD WATER WELL ANALYSIS

Dear Mr. and Mrs. Biebelle:

On July 29, representatives of the New Mexico Oil Conservation Division (OCD) and Marathon Oil sampled your water well, Upper Indian Hills Spring West, and the Arroyo Spring Water to determine if contamination may have occurred as a result of the leak from a flow line in Marathon's Indian Basin Field. Samples taken by OCD from the water well and Arroyo Spring were analyzed for hydrocarbons, solvents, heavy metals and general water chemistry at our contract laboratory, ANA-LAB, in Kilgore, Texas. Only hydrocarbons were analyzed in the ample taken from Upper Indian Hills Spring. The sample analyses have been received and are attached. Also attached are analyses of earlier samples from your well taken jointly by the OCD and the NM Environment Department.

The results of the sampling show that no hydrocarbons or abnormally high levels of inorganic constituents are present. The water can be characterized as a calcium-sulfate water whereas the water lost in the pipeline break is best described as a sodium-chloride water mixed with hydrocarbons. I enclose a list of water quality standards compiled by the NM Environment Department so that you can compare your results.

If you have any questions about the analyses or wish further information, please contact Bill Olson at 827-5812.

Sincerely,

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

Attachment

cc : OCD Artesia District Office

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

October 3, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from the water samples obtained on September 24, 1991 from your well and from natural springs located in Rocky Arroyo and utilized by you for stock water are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present in any of the samples.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 738

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

September 19, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from the water samples obtained on September 9, 1991 from your well and from natural springs located in Rocky Arroyo and utilized by you for stock water are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present in any of the samples.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 732

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

September 10, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from the water samples obtained on August 26, 1991 from your well and from natural springs located in Rocky Arroyo and utilized by you for stock water are attached. Also attached are the results from a sample obtained on August 22, 1991 from a surface pond which existed following a rainfall event. The sample from this pond was obtained at your specific request. No hydrocarbons or abnormally high chloride concentrations were found to be present in any of the samples.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 731

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 28, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from the water samples obtained on August 19, 1991 from your well and from natural springs located in Rocky Arroyo and utilized by you for stock water are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 724

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 20, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from the water samples obtained on August 4, 1991 from your well and from natural springs located in Rocky Arroyo and utilized by you for stock water are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 719

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 13, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from the water samples obtained on August 4, 1991 from your well and from natural springs located in Rocky Arroyo and utilized by you for stock water are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 714

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 5, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from the water samples obtained on July 29, 1991 from your well and from natural springs located in Rocky Arroyo and utilized by you for stock water are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 708

Mid-Continent Region
Production United States

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

Marathon Oil Company

July 29, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from the water samples obtained on July 15, 1991 and July 22, 1991 from your well and from natural springs located in Rocky Arroyo and utilized by you for stock water are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 702

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 15, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from the water samples obtained from your well on July 8, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 700

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 10, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from the water samples obtained from your well on July 1, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 696

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 2, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from the water samples obtained from your well on June 3, 1991 and June 24, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 693

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

June 27, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from water samples obtained on May 20, 1991 and May 27, 1991 from your well and from natural springs located in Rocky Arroyo and utilized by you for stock water are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present. You may note that some of the attached reports contain results for numerous other parameters. The Environmental Bureau of the New Mexico Oil Conservation Division requested that this one-time analyses be conducted to appropriately characterize your water. The results indicate that your water is typical, as compared to other waters in this area.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 689

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

June 26, 1991

Mr. & Mrs. Walter Biebelle
646 Queen Route
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. & Mrs. Biebelle:

Final analytical results from water samples obtained on June 11, 1991 and June 17, 1991 from your well and from natural springs located in Rocky Arroyo and utilized by you for stock water are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for these parameters as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 684

Spring Analyses -
Upper Indian Hills - West

Western Atlas International
A Gearhart Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
10/01/91

JOB NUMBER: 911797 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: 32-03-14A INDIAN BASIN
DATE SAMPLED.....: 09/24/91
TIME SAMPLED.....: 08:59
WORK DESCRIPTION...: 2

LABORATORY I.D...: 911797-0002
DATE RECEIVED....: 09/26/91
TIME RECEIVED....: 15:40
REMARKS.....:

Upper Indian Hills Spring - West

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	8.0	0.5	mg/L	325.2 (1)	09/27/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/30/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Timothy L. Barbera

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International
a Litton/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
09/13/91

JOB NUMBER: 911689 CUSTOMER: MARATHON OIL COMPANY ATTN: DAVID LOUCH

CLIENT I.D.....: 32-03-144 IBGP PIPELINE
DATE SAMPLED.....: 09/09/91
TIME SAMPLED.....: 14:15
WORK DESCRIPTION...: 2

LABORATORY I.D...: 911689-0002
DATE RECEIVED....: 09/11/91
TIME RECEIVED....: 15:25
REMARKS.....:

UPPER INDIAN HILLS SPRING - WEST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	8.6	0.5	mg/L	325.2 (1)	09/12/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/12/91	MF
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Kaggen

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Litton Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/30/91

JOB NUMBER: 911616 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/26/91
TIME SAMPLED.....: 13:09
WORK DESCRIPTION...: 2

LABORATORY I.D...: 911616-0002
DATE RECEIVED....: 08/28/91
TIME RECEIVED....: 15:26
REMARKS.....:

UPPER INDIAN HILLS SPRING - WEST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	6.6	0.5	mg/L	325.2 (1)	08/29/91	MW
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/29/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Nastasi

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Litton-Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/23/91

JOB NUMBER: 911575 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/19/91
TIME SAMPLED.....: 11:28
WORK DESCRIPTION...: 2

LABORATORY I.D...: 911575-0002
DATE RECEIVED....: 08/21/91
TIME RECEIVED....: 16:06
REMARKS.....:

UPPER INDIAN HILLS SPRING - WEST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	4.3	0.5	mg/L	325.2 (1)	08/21/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/22/91	
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Hagger

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/16/91

JOB NUMBER: 911529 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/12/91
TIME SAMPLED.....: 13:33
WORK DESCRIPTION...: 2

LABORATORY I.D...: 911529-0002
DATE RECEIVED....: 08/14/91
TIME RECEIVED....: 13:25
REMARKS.....:

UPPER INDIAN HILLS SPRING - WEST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	9.7	0.5	mg/L	325.2 (1)	08/15/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/15/91	PCM
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Barkus

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/08/91

OB NUMBER: 911476 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

LIENT I.D.....: 32-03-144 INDIAN BASIN
ATE SAMPLED.....: 08/04/91
IME SAMPLED.....: 10:15
ORK DESCRIPTION...: 2

LABORATORY I.D...: 911476-0001
DATE RECEIVED....: 08/06/91
TIME RECEIVED....: 13:55
REMARKS.....:

UPPER INDIAN HILLS SPRING - WEST

EST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH
hloride (Unfilt.)	8.7	0.5	mg/L	325.2 (1)	08/08/91	DTJ
020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/07/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Hayes

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Analytical Chemistry • Utility Operations

RECEIVED
SEP 13 1991
OIL CONSERVATION DIV
SANTA FE

09/11/91

Environmental Bureau NM Oil D.
PO Box 2088
Santa Fe, NM 87504

Sample Identification: Upper Indian Hills Spring West
Collected By: Client
Date & Time Taken: 07/29/91 1111 Location 2
On Site Data: Marathon Indian Basin

Lab Sample Number: 192238 **Received:** 07/31/91 Client: SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Acrolein	ND(100)	ug/l	1018	08/13/91	EPA Method 8240	PM
Acrylonitrile	ND(100)	ug/l	1018	08/13/91	EPA Method 8240	PM
Benzene	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Bromoform	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Bromomethane	ND(10)	ug/l	1018	08/13/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Chlorobenzene	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Chloroethane	ND(10)	ug/l	1018	08/13/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10)	ug/l	1018	08/13/91	EPA Method 8240	PM
Chloroform	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Chloromethane	ND(10)	ug/l	1018	08/13/91	EPA Method 8240	PM
Dibromochloromethane	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Bromodichloromethane	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM

Continued

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
trans-1,2-Dichloroethene	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Dichlorodiflouromethane	ND(1.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
1,2-Dichloropropane	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Ethyl benzene	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Methylene Chloride	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
1,1,2,2-Tetrachloroethane	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Tetrachloroethene	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Toluene	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
1,1,1-Trichloroethane	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Trichloroethene	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Trichlorofluoromethane	ND(10)	ug/l	1018	08/13/91	EPA Method 8240	PM
Vinyl Chloride	ND(10)	ug/l	1018	08/13/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(5.0)	ug/l	1018	08/13/91	EPA Method 8240	PM
Xylenes	ND(10)	ug/l	1018	08/13/91	EPA Method 8240	PM
Benzene	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB
Ethyl benzene	<0.4	ug/l	0800	08/05/91	EPA Method 8020	KB
Toluene	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB
Xylenes	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB

Reported detection limits are EPA suggested practical quantitation limits. Actual limit may vary with matrix.

Quality Assurance for the SET with Sample 192238

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By

Benzene

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Quality Assurance for the SET with Sample 192238

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	115	0800	08/05/91	KB
				Ethyl benzene					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.4	ug/l	<0.4		100	0800	08/05/91	KB
192240	Spike				100	72	0800	08/05/91	KB
				Toluene					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	96	0800	08/05/91	KB
				Xylenes					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	70	0800	08/05/91	KB

BROMOFLUOROBENZENE

Ion Abundance Criteria

m/z	Min %	Max %	Mass	Actual	Status
50	15.0	40.0	95	15.2	PASS
75	30.0	60.0	95	43.0	PASS
95	100.0	---	---	100.0	PASS
96	5.0	9.0	95	5.6	PASS
173	---	2.0	174	0.0	PASS
174	50.0	---	95	97.9	PASS
175	5.0	9.0	174	5.1	PASS
176	95.0	101.0	174	100.0	PASS
177	5.0	9.0	176	5.1	PASS

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Quality Assurance for the SET with Sample 192238

DUPLICATE

Compound Name	Sample	Duplicate	Difference
Benzene	ND	ND	0%
Chlorobenzene	ND	ND	0%
1,1-Dichloroethene	ND	ND	0%
Toluene	ND	ND	0%
Trichloroethene	ND	ND	0%

SPIKE

Compound Name	Concent.	Sample	Recovery
Benzene	100	87.7	88%
1,1-Dichloroethene	100	66.4	66%
Trichloroethene	100	84.0	84%

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

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LABORATORY TESTS RESULTS
08/02/91

JOB NUMBER: 911436 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/29/91
TIME SAMPLED.....: 11:11
WORK DESCRIPTION...: 2

LABORATORY I.D...: 911436-0002
DATE RECEIVED....: 07/31/91
TIME RECEIVED....: 15:15
REMARKS.....:

UPPER Indian Hills Spring - WEST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TI
Chloride (Unfilt.)	8.1	0.5	mg/L	325.2 (1)	08/01/91	(
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/01/91	
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Teresa T. Benton

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LABORATORY TESTS RESULTS
07/26/91

JOB NUMBER: 911398 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/22/91
TIME SAMPLED.....: 15:10
WORK DESCRIPTION...: #2

LABORATORY I.D...: 911398-0002
DATE RECEIVED....: 07/24/91
TIME RECEIVED....: 13:15
REMARKS.....:

UPPER HILLS SPRING - WEST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TEC
Chloride (Unfilt.)	3.0	0.5	mg/L	325.2 (1)	07/25/91	M
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/25/91	MR
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY Timothy T. Bercaw

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07/26/91 14:22 P.05

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LABORATORY TESTS RESULTS
07/19/91

JOB NUMBER: 911323 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/15/91
TIME SAMPLED.....: 11:55
WORK DESCRIPTION...: #2

LABORATORY I.D...: 911323-0002
DATE RECEIVED....: 07/17/91
TIME RECEIVED....: 13:15
REMARKS.....:

UPPER INDIAN HILLS SPRING - WEST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	12.9	0.5	mg/L	325.2 (1)	07/18/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/18/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Barbee

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LABORATORY TESTS RESULTS
07/12/91

JOB NUMBER: 911259 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/08/91
TIME SAMPLED.....: 11:08
WORK DESCRIPTION...: #2

LABORATORY I.D...: 911259-0002
DATE RECEIVED....: 07/10/91
TIME RECEIVED....: 13:15
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	11.0	0.5	mg/L	325.2 (1)	07/11/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/10/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Berkes

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LABORATORY TESTS RESULTS
07/08/91

JOB NUMBER: 911228 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/01/91
TIME SAMPLED.....: 12:50
WORK DESCRIPTION...: #2

LABORATORY I.D...: 911228-0002
DATE RECEIVED....: 07/03/91
TIME RECEIVED....: 16:20
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	10.3	0.5	mg/L	325.2 (1)	07/08/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/03/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Daniel McWhorter

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LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 911153 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-166 INDIAN BASIN
DATE SAMPLED.....: 06/24/91
TIME SAMPLED.....: 10:50
WORK DESCRIPTION...: 2

LABORATORY I.D...: 911153-0002
DATE RECEIVED....: 06/26/91
TIME RECEIVED....: 14:52
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TI
Chloride (Unfilt.)	11.3	1	mg/L	325.2 (1)	06/28/91	(
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/27/91	1
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David McWhorter

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LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 911062 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: IBGP PIPELINE LEAK 32-03-164
DATE SAMPLED.....: 06/17/91
TIME SAMPLED.....: 09:45
WORK DESCRIPTION...: 2

LABORATORY I.D...: 911062-0002
DATE RECEIVED....: 06/19/91
TIME RECEIVED....: 12:55
REMARKS.....:

Upper Indian Hills Spring - West

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH
Chloride (Unfilt.)	10.9	0.5	mg/L	325.2 (1)	06/21/91	PJN
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/20/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David McCulloch

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LABORATORY TESTS RESULTS
06/17/91

JOB NUMBER:...911022 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: 52.05.164 1600 PIPELINE LEAK
DATE SAMPLED.....: 06/11/91
TIME SAMPLED.....: 09:05
WORK DESCRIPTION...: 02

LABORATORY I.D...: 911022-0002
DATE RECEIVED....: 06/13/91
TIME RECEIVED....: 16:06
REMARKS.....:

UPPER INDIAN HILLS SPRING - WEST

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	11.2	0.5	mg/L	325.2 (1)	06/14/91
Solids, Total Dissolved (TDS)	1010	10	mg/L	160.1 (1)	06/14/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/14/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Eileen J. Noyes

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LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 910948 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.144 IBOP PIPELINE LEAK
DATE SAMPLED.....: 06/04/91
TIME SAMPLED.....: 08:55
WORK DESCRIPTION...: #2

LABORATORY I.D...: 910948-0003
DATE RECEIVED....: 06/05/91
TIME RECEIVED....: 16:11
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	11.4	0.5	mg/L	325.2 (1)	06/06/91	C
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/06/91	A
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Donald McWhorter

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LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 910948 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.144 IBDP PIPELINE LEAK
DATE SAMPLED.....: 06/03/91
TIME SAMPLED.....: 13:42
WORK DESCRIPTION...: #2

LABORATORY I.D...: 910948-0002
DATE RECEIVED....: 06/05/91
TIME RECEIVED....: 16:11
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	11.3	0.5	mg/L	325.2 (1)	06/06/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/06/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Daniel McWhorter

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LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910887 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27-98-810 MINERAL ASSAY
DATE SAMPLED.....: 05/27/91
TIME SAMPLED.....: 15:10
WORK DESCRIPTION...: #2

LABORATORY I.D...: 910887-0002
DATE RECEIVED....: 05/29/91
TIME RECEIVED....: 15:22
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Alkalinity, Total (Unfilt.)	249	5	mg/L CaCO3	310.1 (1)	06/03/91
Bicarbonate (Unfilt.)	304	5	mg/L	403 (3)	06/03/91
Carbonate (Unfilt.)	<1	1	mg/L	403 (3)	06/03/91
Chloride (Unfilt.)	11.7	0.5	mg/L	325.2 (1)	05/30/91
Conductivity (Unfilt.)	1190	1	umhos/cm @25dF	120.1 (1)	05/30/91
Hardness, Total (Unfilt.)	747	1	mg/L(as CaCO3)	314A (3)	06/20/91
Nitrogen, Nitrate (Unfilt.)	0.2	0.1	mg/L (as N)	353.2 (1)	06/13/91
pH (Unfilt.)	7.99	0.01	pH Units	150.1 (1)	06/03/91
Solids, Total Dissolved (TDS)	993	10	mg/L	160.1 (1)	06/06/91
Sulfate (Unfilt.)	480	10	mg/L	375.3 (1)	06/19/91
Calcium, Total (Ca)	190	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Iron, Total (Fe)	0.04	0.03	mg/L	200.7/6010 (1,2)	06/11/91
Magnesium, Total (Mg)	66.2	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Manganese, Total (Mn)	<0.01	0.01	mg/L	200.7/6010 (1,2)	06/11/91
Potassium, Total (K)	1.74	0.01	mg/L	258.1 (1)	06/20/91
Sodium, Total (Na)	13	1	mg/L	200.7/6010 (1,2)	06/11/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/29/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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CORE LABORATORIES

ANALYTICAL REPORT
06/21/91

CUSTOMER: Marathon Oil Company File No.: 910887

CATION/ANION BALANCE

Client Sample I.D..... #2
Remark/Project..... 27-98-810 Mineral Assay
Date/Time Sampled..... 05-27-91/1510
Date/Time Received..... 05-29-91/1522
Laboratory Sample I.D..... 910887-2

PARAMETER	RESULT		UNITS
pH	7.55		pH Units
Conductivity at 25 degrees C	1190		umhos/cm
Alkalinity (as CaCO3)	249		mg/L
Total Diss. Solids (measured)	993		mg/L
Total Diss. Solids (calculated)	919		mg/L
		meq/Liter	
Calcium (Ca)	190	9.48	mg/L
Magnesium (Mg)	66.2	5.45	mg/L
Sodium (Na)	13	0.57	mg/L
Potassium (K)	1.74	0.04	mg/L
Total Cations meq/Liter		15.54	
		meq/Liter	
Bicarbonate (HCO3)	304	4.98	mg/L
Carbonate (CO3)	ND(1)	0.00	mg/L
Hydroxide (OH)	ND(1)	0.00	mg/L
Chloride (Cl)	11.7	0.33	mg/L
Sulfate (SO4)	480	9.99	mg/L
Total Anions meq/Liter		15.31	
Cation-Anion Balance (RPD)	1.51 Percent		

ND = NOT DETECTED AT LEVEL SHOWN IN PARENTHESIS

Approved By: Darrel McWhorter

1300 South Potomac, St., Suite 130
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Tele. (303) 751-1780

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER:- 910852 CUSTOMER: MARATHON OIL COMPANY ATTN: D. NIXON

CLIENT I.D.....: 27 9S 81O
DATE SAMPLED.....: 05/20/91
TIME SAMPLED.....: 16:30
WORK DESCRIPTION...: 2

LABORATORY I.D...: 910852-0002
DATE RECEIVED....: 05/22/91
TIME RECEIVED....: 16:30
REMARKS.....: SAMPLE TIME DIFFERS FROM COC

Upper Indian Hills SPRING - WEST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	11.3	0.5	mg/L	325.2 (1)	05/24/91	DAH
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/23/91	
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David McWhorter

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FROM MARATHON

Lower Indian Hills Spring

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CORE LABORATORIES

LABORATORY TESTS RESULTS
10/01/91

JOB NUMBER: 911797 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 09/24/91
TIME SAMPLED.....: 09:58
WORK DESCRIPTION...: S

LABORATORY I.D...: 911797-0003
DATE RECEIVED....: 09/26/91
TIME RECEIVED....: 15:40
REMARKS.....:

Lower Indian Hills Spring

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	8.2	0.5	mg/L	325.2 (1)	09/27/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/30/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L. Buckner

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CORE LABORATORIES

LABORATORY TESTS RESULTS
09/13/91

JOB NUMBER: 911689 CUSTOMER: MARATHON OIL COMPANY ATTN: DAVID LOUCH

CLIENT I.D.....: 32-03-144 IBGP PIPELINE
DATE SAMPLED.....: 09/09/91
TIME SAMPLED.....: 14:57
WORK DESCRIPTION...: 3

LABORATORY I.D...: 911689-0003
DATE RECEIVED....: 09/11/91
TIME RECEIVED....: 15:25
REMARKS.....:

LOWER INDIAN HILLS SPRING

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	8.6	0.5	mg/L	325.2 (1)	09/12/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/13/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Naggs

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/30/91

JOB NUMBER: 911616 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/26/91
TIME SAMPLED.....: 14:13
WORK DESCRIPTION...: 3

LABORATORY I.D...: 911616-0003
DATE RECEIVED....: 08/28/91
TIME RECEIVED....: 15:26
REMARKS.....: BROWN PARTICLES IN SAMPLE

LOWER INDIAN HILLS SPRING

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TI
Chloride (Unfilt.)	6.7	0.5	mg/L	325.2 (1)	08/29/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/29/91	I
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Mapper

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/23/91

JOB NUMBER: 911575 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/19/91
TIME SAMPLED.....: 12:59
WORK DESCRIPTION...: 3

LABORATORY I.D...: 911575-0003
DATE RECEIVED....: 08/21/91
TIME RECEIVED....: 16:06
REMARKS.....:

LOWER INDIAN HILLS SPRING

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	5.0	0.5	mg/L	325.2 (1)	08/21/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/22/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Mapes

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LABORATORY TESTS RESULTS
08/16/91

JOB NUMBER: 911529 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/12/91
TIME SAMPLED.....: 12:18
WORK DESCRIPTION...: 3

LABORATORY I.D...: 911529-0003
DATE RECEIVED....: 08/14/91
TIME RECEIVED....: 13:25
REMARKS.....:

LOWER INDIAN HILLS SPRING

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	9.6	0.5	mg/L	325.2 (1)	08/15/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/15/91	PCM
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Benbeus

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/08/91

JOB NUMBER: 911476 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-164 INDIAN BASIN
DATE SAMPLED.....: 08/06/91
TIME SAMPLED.....: 11:00
WORK DESCRIPTION...: 3

LABORATORY I.D...: 911476-0002
DATE RECEIVED....: 08/06/91
TIME RECEIVED....: 13:55
REMARKS.....: 1 VOA HAS BUBBLE (CL ONLY)

LOWER INDIAN HILLS SPRING

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH
Chloride (Unfilt.)	8.7	0.5	mg/L	325.2 (1)	08/08/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/08/91	HRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Watson

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LABORATORY TESTS RESULTS
08/02/91

JOB NUMBER: 911436 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-166 INDIAN BASIN
DATE SAMPLED.....: 07/29/91
TIME SAMPLED.....: 13:42
WORK DESCRIPTION...: S

LABORATORY I.D...: 911436-0003
DATE RECEIVED....: 07/31/91
TIME RECEIVED....: 15:15
REMARKS.....: AIR BUBBLE IN 1 VOA. CL ON

LOWER INDIAN HILLS SPRING

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE T
Chloride (Unfilt.)	7.9	0.5	mg/L	325.2 (1)	08/01/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/02/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L. Benbow

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LABORATORY TESTS RESULTS
07/26/91

JOB NUMBER: 911398 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/22/91
TIME SAMPLED.....: 16:15
WORK DESCRIPTION...: #3

LABORATORY I.D....: 911398-0003
DATE RECEIVED.....: 07/24/91
TIME RECEIVED.....: 13:15
REMARKS.....:

LOWER INDIAN HILLS SPRING

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TEC
Chloride (Unfilt.)	5.2	0.5	mg/L	325.2 (1)	07/25/91	M
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/25/91	MR(
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Barbee

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/19/91

JOB NUMBER: 911323 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/15/91
TIME SAMPLED.....: 14:30
WORK DESCRIPTION...: #3

LABORATORY I.D...: 911323-0003
DATE RECEIVED....: 07/17/91
TIME RECEIVED....: 13:15
REMARKS.....:

LOWER INDIAN HILLS SPRING

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	11.6	0.5	mg/L	325.2 (1)	07/18/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/18/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burkes

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LABORATORY TESTS RESULTS
07/08/91

JOB NUMBER: 911228 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/01/91
TIME SAMPLED.....: 14:05
WORK DESCRIPTION...: #3

LABORATORY I.D...: 911228-0003
DATE RECEIVED....: 07/03/91
TIME RECEIVED....: 16:20
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	10.5	0.5	mg/L	325.2 (1)	07/08/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/04/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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PAGE:3

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LABORATORY TESTS RESULTS
07/12/91

JOB NUMBER: 911259 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/08/91
TIME SAMPLED.....: 12:25
WORK DESCRIPTION...: #3

LABORATORY I.D...: 911259-0003
DATE RECEIVED....: 07/10/91
TIME RECEIVED....: 13:15
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	10.8	0.5	mg/L	325.2 (1)	07/11/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/10/91	MI
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Barbour

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LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 911153 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 06/24/91
TIME SAMPLED.....: 12:55
WORK DESCRIPTION...: 3

LABORATORY I.D...: 911153-0003
DATE RECEIVED....: 06/26/91
TIME RECEIVED....: 14:52
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TEC
Chloride (Unfilt.)	11.3	1	mg/L	325.2 (1)	06/28/91	C.
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/27/91	PE
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Donald McWhorter

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LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 911062 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: IBOP PIPELINE LEAK 32-03-144
DATE SAMPLED.....: 06/17/91
TIME SAMPLED.....: 12:17
WORK DESCRIPTION...: 3

LABORATORY I.D...: 911062-0003
DATE RECEIVED....: 06/19/91
TIME RECEIVED....: 12:55
REMARKS.....:

LOWER INDIAN HILLS SPRING

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH
Chloride (Unfilt.)	11.1	0.5	mg/L	325.2 (1)	06/21/91	PJM
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/20/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David McWhorter

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LABORATORY TESTS RESULTS
06/17/91

JOB NUMBER: 911022 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.144 IBOP PIPELINE LEAK
DATE SAMPLED.....: 06/11/91
TIME SAMPLED.....: 09:57
WORK DESCRIPTION...: #3

LABORATORY I.D...: 911022-0003
DATE RECEIVED....: 06/13/91
TIME RECEIVED....: 16:06
REMARKS.....:

LOWER INDIAN HILLS SPRING

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	11.2	0.5	mg/L	325.2 (1)	06/14/91
Solids, Total Dissolved (TDS)	1010	10	mg/L	160.1 (1)	06/14/91
AROMATIC VOLATILE ORGANICS		#1		8020 (2)	06/14/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen G. Noggs

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 910948 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: 32.03.144 IBGP PIPELINE LEAK
DATE SAMPLED.....: 06/04/91
TIME SAMPLED.....: 09:08
WORK DESCRIPTION...: #3

LABORATORY I.D...: 910948-0005
DATE RECEIVED....: 06/05/91
TIME RECEIVED....: 16:11
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	11.6	0.5	mg/L	325.2 (1)	06/06/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/06/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 910948 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.144 IBGP PIPELINE LEAK
DATE SAMPLED.....: 06/03/91
TIME SAMPLED.....: 11:33
WORK DESCRIPTION...: #3

LABORATORY I.D...: 910948-0004
DATE RECEIVED....: 06/05/91
TIME RECEIVED....: 16:11
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	11.3	0.5	mg/L	325.2 (1)	06/06/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/06/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: [signature]

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910887 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27-98-810 MINERAL ASSAY
DATE SAMPLED.....: 05/27/91
TIME SAMPLED.....: 14:30
WORK DESCRIPTION...: #3

LABORATORY I.D...: 910887-0003
DATE RECEIVED....: 05/29/91
TIME RECEIVED....: 15:22
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Alkalinity, Total (Unfilt.)	260	5	mg/L CaCO3	310.1 (1)	06/03/91
Bicarbonate (Unfilt.)	318	5	mg/L	403 (3)	06/03/91
Carbonate (Unfilt.)	<1	1	mg/L	403 (3)	06/03/91
Chloride (Unfilt.)	11.2	0.5	mg/L	325.2 (1)	05/30/91
Conductivity (Unfilt.)	1190	1	umhos/cm @25df	120.1 (1)	05/30/91
Hardness, Total (Unfilt.)	771	1	mg/L(as CaCO3)	314A (3)	06/20/91
Nitrogen, Nitrate (Unfilt.)	0.2	0.1	mg/L (as N)	353.2 (1)	06/13/91
pH (Unfilt.)	7.57	0.01	pH Units	150.1 (1)	06/03/91
Solids, Total Dissolved (TDS)	1010	10	mg/L	160.1 (1)	06/06/91
Sulfate (Unfilt.)	467	10	mg/L	375.3 (1)	06/19/91
Calcium, Total (Ca)	196	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Iron, Total (Fe)	<0.03	0.03	mg/L	200.7/6010 (1,2)	06/11/91
Magnesium, Total (Mg)	68.4	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Manganese, Total (Mn)	<0.01	0.01	mg/L	200.7/6010 (1,2)	06/11/91
Potassium, Total (K)	1.44	0.01	mg/L	258.1 (1)	06/20/91
Sodium, Total (Na)	13	1	mg/L	200.7/6010 (1,2)	06/11/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/29/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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CORE LABORATORIES

ANALYTICAL REPORT
06/21/91

CUSTOMER: Marathon Oil Company File No.: 910887

CATION/ANION BALANCE

Client Sample I.D..... #3
Remark/Project..... 27-98-810 Mineral Assay
Date/Time Sampled..... 05-27-91/1430
Date/Time Received..... 05-29-91/1522
Laboratory Sample I.D..... 910887-3

PARAMETER	RESULT		UNITS
pH	7.57		pH Units
Conductivity at 25 degrees C	1190		umhos/cm
Alkalinity (as CaCO3)	260		mg/L
Total Diss. Solids (measured)	1010		mg/L
Total Diss. Solids (calculated)	916		mg/L
		meq/Liter	
Calcium (Ca)	196	9.78	mg/L
Magnesium (Mg)	68.4	5.63	mg/L
Sodium (Na)	13	0.57	mg/L
Potassium (K)	1.44	0.04	mg/L
Total Cations meq/Liter		16.01	
		meq/Liter	
Bicarbonate (HCO3)	318	5.21	mg/L
Carbonate (CO3)	ND(1)	0.00	mg/L
Hydroxide (OH)	ND(1)	0.00	mg/L
Chloride (Cl)	11.2	0.32	mg/L
Sulfate (SO4)	467	9.72	mg/L
Total Anions meq/Liter		15.25	
Cation-Anion Balance (RPD)	4.87 Percent		

ND = NOT DETECTED AT LEVEL SHOWN IN PARENTHESIS

Approved By: [signature]

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LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910852 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27 98 810
DATE SAMPLED.....: 05/20/91
TIME SAMPLED.....: 15:40
WORK DESCRIPTION...: 3

LABORATORY I.D...: 910852-0003
DATE RECEIVED....: 05/22/91
TIME RECEIVED....: 16:30
REMARKS.....: SAMPLE TIME DIFFERS FROM COC

Lower Indian Hills Spring-

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OR MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	11.6	0.5	mg/L	325.2 (1)	05/24/91	DAH
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/23/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David McWhorter

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Biebelle water well

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CORE LABORATORIES

LABORATORY TESTS RESULTS
10/01/91

JOB NUMBER: 911797 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-146 INDIAN BASIN
DATE SAMPLED.....: 09/24/91
TIME SAMPLED.....: 10:12
WORK DESCRIPTION...: 4

LABORATORY I.D...: 911797-0004
DATE RECEIVED....: 09/26/91
TIME RECEIVED....: 15:40
REMARKS.....:

Biebelle Water Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	8.5	0.5	mg/L	325.2 (1)	09/27/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/30/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L Burkes

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LABORATORY TESTS RESULTS
09/13/91

JOB NUMBER: 911689 CUSTOMER: MARATHON OIL COMPANY ATTN: DAVID LOUCH

CLIENT I.D.....: 32-03-144 IBGP PIPELINE
DATE SAMPLED.....: 09/09/91
TIME SAMPLED.....: 15:44
WORK DESCRIPTION...: 4

LABORATORY I.D...: 911689-0004
DATE RECEIVED....: 09/11/91
TIME RECEIVED....: 15:25
REMARKS.....:

BIEBELLE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	8.9	0.5	mg/L	325.2 (1)	09/12/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/13/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Noggle

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LABORATORY TESTS RESULTS
08/30/91

JOB NUMBER: 911616 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/26/91
TIME SAMPLED.....: 14:35
WORK DESCRIPTION...: 4

LABORATORY I.D...: 911616-0004
DATE RECEIVED....: 08/28/91
TIME RECEIVED....: 15:26
REMARKS.....: BROWN PARTICLES IN SAMPLE

BIEBELLE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TI
Chloride (Unfilt.)	8.2	0.5	mg/L	325.2 (1)	08/29/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/29/91	I
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen G. Mayfield

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LABORATORY TESTS RESULTS
08/23/91

JOB NUMBER: 911575 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/19/91
TIME SAMPLED.....: 13:20
WORK DESCRIPTION...: 4

LABORATORY I.D...: 911575-0004
DATE RECEIVED....: 08/21/91
TIME RECEIVED....: 16:06
REMARKS.....: ORANGE PARTICLES IN VOA

BIEBELLE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	10.4	0.5	mg/L	325.2 (1)	08/21/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/22/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Nixon

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LABORATORY TESTS RESULTS
08/16/91

JOB NUMBER: 911529 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/12/91
TIME SAMPLED.....: 14:28
WORK DESCRIPTION...: 4

LABORATORY I.D...: 911529-0004
DATE RECEIVED....: 08/14/91
TIME RECEIVED....: 13:25
REMARKS.....:

BIEBELLE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	10.9	0.5	mg/L	325.2 (1)	08/15/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/15/91	PCM
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burkhead

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LABORATORY TESTS RESULTS
08/08/91

JOB NUMBER: 911476 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/06/91
TIME SAMPLED.....: 11:20
WORK DESCRIPTION...: 4

LABORATORY I.D...: 911476-0003
DATE RECEIVED....: 08/06/91
TIME RECEIVED....: 13:55
REMARKS.....:

BIEBELLE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	10.1	0.5	mg/L	325.2 (1)	08/08/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/07/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen G. Nafzger

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LABORATORY TESTS RESULTS
08/02/91

JOB NUMBER: 911436 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/29/91
TIME SAMPLED.....: 12:10
WORK DESCRIPTION...: 4

LABORATORY I.D...: 911436-0004
DATE RECEIVED....: 07/31/91
TIME RECEIVED....: 15:15
REMARKS.....:

BIEBELLE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TI
Chloride (Unfilt.)	11.2	0.5	mg/L	325.2 (1)	08/01/91	C
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/01/91	P
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY Linda T. Benton

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Analytical Chemistry • Utility Operations

09/11/91

Environmental Bureau NM Oil D.
PO Box 2088
Santa Fe, NM 87504

Sample Identification: BieBelle Water Well
Collected By: Client
Date & Time Taken: 07/29/91 1210
On Site Data: Marathon Indian Basin

Lab Sample Number: 192239 **Received:** 07/31/91 Client: SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	insuf. sample	mg/l as C	1900	08/13/91	EPA Method 310.1	BW
Boron	<.5	mg/l	1700	08/09/91	EPA Method 212.3	MB
Bromide	10	mg/l	1200	08/16/91	ASTM D3869 vol 11.02	ES
Cation-Anion Balance	Insuf. sample	meq/meq	1600	09/10/91		SK
Carbonate	insuf. sample	mg/l	1600	08/14/91	APHA Method 263	BC
Specific Conductance	800	Micromhos	0030	08/01/91	EPA Method 120.1	SB
Fluoride	1.4	mg/l	1400	08/06/91	EPA Method 340.1	BC
Bicarbonate	insuf. sample	mg/l	1600	08/14/91	APHA Method 263	BC
Sulfate	250	mg/l	1230	08/14/91	EPA Method 375.4	MB
Total Dissolved Solids	1000	mg/l	1130	08/07/91	EPA Method 160.1	BW
pH	7.1	SU	0100	08/01/91	EPA Method 150.1	SB
Chloride	14	mg/l	1300	08/12/91	EPA Method 325.3	HG
Silver	<.01	mg/l	1910	08/07/91	EPA Method 6010	GK
Aluminum	.16	mg/l	1400	08/06/91	EPA Method 6010	GK
Arsenic	<.005	mg/l	1600	08/14/91	EPA Method 206.2	GK
Barium	.03	mg/l	1910	08/07/91	EPA Method 6010	GK

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Beryllium	<.01	mg/l	1910	08/07/91	EPA Method 6010	GK
Dissolved Calcium	200	mg/l	1400	08/05/91	EPA Method 6010	NT
Cadmium	<.001	mg/l	1300	08/16/91	EPA Method 213.2	GK
Cobolt	<.05	mg/l	1910	08/07/91	EPA Method 6010	GK
Chromium	<.02	mg/l	1910	08/07/91	EPA Method 6010	GK
Copper	<.02	mg/l	1910	08/07/91	EPA Method 6010	GK
Dissolved Iron	<.05	mg/l	1400	08/05/91	EPA Method 6010	NT
Mercury	<.001	mg/l	1730	08/01/91	EPA Method 245.3	MET
Dissolved Potassium	<2	mg/l	1400	08/05/91	EPA Method 6010	NT
Dissolved Magnesium	76	mg/l	1400	08/05/91	EPA Method 6010	NT
Dissolved Manganese	<.01	mg/l	1400	08/05/91	EPA Method 6010	NT
Molybdenum	<.05	mg/l	1910	08/07/91	EPA Method 6010	GK
Dissolved Sodium	14	mg/l	1400	08/05/91	EPA Method 6010	NT
Nickel	<.05	mg/l	1910	08/07/91	EPA Method 6010	GK
Lead	.003	mg/l	1915	08/15/91	EPA Method 239.2	GK
Antimony	<.1	mg/l	1910	08/07/91	EPA Method 6010	GK
Selenium	<.005	mg/l	2030	08/14/91	EPA Method 270.2	GK
Silicon	8.2	mg/l	1350	08/15/91	EPA Method 6010	GDG
Thallium	<.2	mg/l	1350	08/15/91	EPA Method 6010	GDG
Vanadium	<.05	mg/l	1350	08/15/91	EPA Method 6010	GDG
Zinc	.05	mg/l	1910	08/07/91	EPA Method 6010	GK

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Acrolein	ND(100)	ug/l	1150	08/13/91	EPA Method 8240	PM
Acrylonitrile	ND(100)	ug/l	1150	08/13/91	EPA Method 8240	PM
Benzene	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Bromoform	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Bromomethane	ND(10)	ug/l	1150	08/13/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Chlorobenzene	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Chloroethane	ND(10)	ug/l	1150	08/13/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10)	ug/l	1150	08/13/91	EPA Method 8240	PM
Chloroform	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Chloromethane	ND(10)	ug/l	1150	08/13/91	EPA Method 8240	PM
Dibromochloromethane	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Bromodichloromethane	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Dichlorodiflouromethane	ND(1.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
1,2-Dichloropropane	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Ethyl benzene	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM

Continued

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Methylene Chloride	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
1,1,2,2-Tetrachloroethane	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Tetrachloroethene	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Toluene	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
1,1,1-Trichloroethane	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Trichloroethene	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Trichlorofluoromethane	ND(10)	ug/l	1150	08/13/91	EPA Method 8240	PM
Vinyl Chloride	ND(10)	ug/l	1150	08/13/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(5.0)	ug/l	1150	08/13/91	EPA Method 8240	PM
Xylenes	ND(10)	ug/l	1150	08/13/91	EPA Method 8240	PM
Benzene	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB
Ethyl benzene	<0.4	ug/l	0800	08/05/91	EPA Method 8020	KB
Toluene	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB
Xylenes	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB

Reported detection limits are EPA suggested practical quantitation limits. Actual limit may vary with matrix.

Quality Assurance for the SET with Sample 192239

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
				Alkalinity					
	Standard	2420	mg/l as C	2358		103	1900	08/13/91	BW
191618	Duplicate	300	mg/l as C	300		100	1900	08/13/91	BW
191618	Spike		mg/l as C			100	1900	08/13/91	BW
				Boron					
	Blank	.000	mg/l				1700	08/09/91	MB

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 192239

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	.51	mg/l	.50		102	1700	08/09/91	MB
191621	Duplicate	<.5	mg/l	<.5		100	1700	08/09/91	MB
				Bromide					
	Standard	100	mg/kg	100		100	1200	08/16/91	ES
192244	Duplicate	55	mg/kg	50		110	1200	08/16/91	ES
				Specific Conductance					
192237	Duplicate	1000	Micromhos	1000		100	0030	08/01/91	SB
192239	Duplicate	800	Micromhos	800		100	0030	08/01/91	SB
192240	Duplicate	810	Micromhos	760		106	0030	08/01/91	SB
				Fluoride					
	Standard	5.0	mg/l	5.0		100	1400	08/06/91	BC
191618	Duplicate	<1	mg/l	<1		100	1400	08/06/91	BC
				Sulfate					
	Standard	92	mg/l	100		108	1230	08/14/91	MB
192324	Duplicate	1300	mg/l	1300		100	1230	08/14/91	MB
192324	Spike		mg/l		100	133	1230	08/14/91	MB
				Total Dissolved Solids					
	Blank	.0003	mg/l				1130	08/07/91	BW
	Standard	102	mg/l	100		102	1130	08/07/91	BW
192240	Duplicate	790	mg/l	750		105	1130	08/07/91	BW
				pH					
	Standard	Calibrate	SU	7.0			0100	08/01/91	SB
	Standard	Calibrate	SU	10.0			0100	08/01/91	SB
	Standard	8.0	SU	8.0		100	0100	08/01/91	SB
192237	Duplicate	7.0	SU	7.0		100	0100	08/01/91	SB
				Chloride					
	Standard	72	mg/l	71		101	1300	08/12/91	HG
192997	Duplicate	16	mg/l	15		106	1300	08/12/91	HG
				Silver					
	Blank	<.01	mg/l				1910	08/07/91	GK
	Standard	.20	mg/l	.20		100	1910	08/07/91	GK
	Standard	1.0	mg/l	1.0		100	1910	08/07/91	GK
192240	Duplicate	<.01	mg/l	<.01		100	1910	08/07/91	GK
192239	Spike		mg/l		1.0	99	1910	08/07/91	GK
				Aluminum					
	Blank	<.03	mg/l				1400	08/06/91	GK
	Standard	1.0	mg/l	1.0		100	1400	08/06/91	GK
	Standard	5.1	mg/l	5.0		102	1400	08/06/91	GK
192240	Duplicate	<.03	mg/l	<.03		100	1400	08/06/91	GK
192239	Spike		mg/l		2.0	94	1400	08/06/91	GK
				Arsenic					
	Blank	<.005	mg/l				1600	08/14/91	GK
	Standard	.099	mg/l	.100		101	1600	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK

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Quality Assurance for the SET with Sample 192239

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
191622	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
192240	Spike		mg/l		.100	91	1600	08/14/91	GK
				Barium					
	Blank	<.01	mg/l				1910	08/07/91	GK
	Standard	3.9	mg/l	4.0		103	1910	08/07/91	GK
	Standard	5.2	mg/l	5.0		104	1910	08/07/91	GK
192240	Duplicate	.04	mg/l	.04		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	99	1910	08/07/91	GK
				Beryllium					
	Blank	<.01	mg/l				1910	08/07/91	GK
	Standard	.09	mg/l	.10		111	1910	08/07/91	GK
	Standard	2.0	mg/l	2.0		100	1910	08/07/91	GK
192240	Duplicate	<.01	mg/l	<.01		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	98	1910	08/07/91	GK
				Dissolved Calcium					
	Blank	.16	mg/l				1400	08/05/91	NT
	Standard	10	mg/l	10		100	1400	08/05/91	NT
	Standard	46	mg/l	50		108	1400	08/05/91	NT
192237	Duplicate	200	mg/l	200		100	1400	08/05/91	NT
192240	Spike		mg/l		18	93	1400	08/05/91	NT
				Cadmium					
	Blank	<.001	mg/l				1300	08/16/91	GK
	Standard	.002	mg/l	.002		100	1300	08/16/91	GK
191621	Duplicate	<.001	mg/l	<.001		100	1300	08/16/91	GK
				Cobolt					
	Blank	<.05	mg/l				1910	08/07/91	GK
	Standard	.97	mg/l	1.0		103	1910	08/07/91	GK
	Standard	4.6	mg/l	5.0		108	1910	08/07/91	GK
192240	Duplicate	<.05	mg/l	<.05		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	98	1910	08/07/91	GK
				Chromium					
	Blank	<.02	mg/l				1910	08/07/91	GK
	Standard	.20	mg/l	.20		100	1910	08/07/91	GK
	Standard	4.8	mg/l	5.0		104	1910	08/07/91	GK
192240	Duplicate	<.02	mg/l	<.02		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	85	1910	08/07/91	GK
				Copper					
	Blank	<.02	mg/l				1910	08/07/91	GK
	Standard	.48	mg/l	.50		104	1910	08/07/91	GK
	Standard	4.9	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.02	mg/l	<.02		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	96	1910	08/07/91	GK
				Dissolved Iron					
	Blank	<.05	mg/l				1400	08/05/91	NT

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Quality Assurance for the SET with Sample 192239

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	2.0	mg/l	2.0		100	1400	08/05/91	NT
	Standard	5.2	mg/l	5.0		104	1400	08/05/91	NT
192237	Duplicate	<.05	mg/l	<.05		100	1400	08/05/91	NT
192240	Spike		ag/l		3.7	106	1400	08/05/91	NT
				Dissolved Potassium					
	Blank	<2	mg/l				1400	08/05/91	NT
	Standard	100	mg/l	100		100	1400	08/05/91	NT
	Standard	49	mg/l	50		102	1400	08/05/91	NT
192237	Duplicate	<2	mg/l	<2		100	1400	08/05/91	NT
192240	Spike		mg/l		18	110	1400	08/05/91	NT
				Dissolved Magnesium					
	Blank	<.01	mg/l				1400	08/05/91	NT
	Standard	99	mg/l	100		101	1400	08/05/91	NT
	Standard	50	mg/l	50		100	1400	08/05/91	NT
192237	Duplicate	69	mg/l	70		101	1400	08/05/91	NT
192240	Spike		mg/l		18	95	1400	08/05/91	NT
				Dissolved Manganese					
	Blank	<.01	mg/l				1400	08/05/91	NT
	Standard	.30	mg/l	.30		100	1400	08/05/91	NT
	Standard	5.2	mg/l	5.0		104	1400	08/05/91	NT
192237	Duplicate	<.01	mg/l	<.01		100	1400	08/05/91	NT
192240	Spike		mg/l		18	106	1400	08/05/91	NT
				Molybdenum					
	Blank	<.05	mg/l				1910	08/07/91	GK
	Standard	5.4	mg/l	5.0		108	1910	08/07/91	GK
192240	Duplicate	<.05	mg/l	<.05		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	99	1910	08/07/91	GK
				Dissolved Sodium					
	Blank	3	mg/l				1400	08/05/91	NT
	Standard	100	mg/l	100		100	1400	08/05/91	NT
	Standard	50	mg/l	50		100	1400	08/05/91	NT
192237	Duplicate	10	mg/l	10		100	1400	08/05/91	NT
192240	Spike		mg/l		18	106	1400	08/05/91	NT
				Nickel					
	Blank	<.05	mg/l				1910	08/07/91	GK
	Standard	.80	mg/l	.80		100	1910	08/07/91	GK
	Standard	4.9	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.05	mg/l	<.05		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	97	1910	08/07/91	GK
				Lead					
	Blank	.002	mg/l				1915	08/15/91	GK
	Blank	<.001	mg/l				1915	08/15/91	GK
	Standard	.028	mg/l	.025		111	1915	08/15/91	GK
	Standard	.027	mg/l	.025		108	1915	08/15/91	GK

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Quality Assurance for the SET with Sample 192239

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	.048	mg/l	.050		104	1915	08/15/91	GK
	Standard	.051	mg/l	.050		102	1915	08/15/91	GK
191621	Duplicate	.004	mg/l	.005		122	1915	08/15/91	GK
193075	Duplicate	.002	mg/l	.001		167	1915	08/15/91	GK
191621	Spike		mg/l		.020	100	1915	08/15/91	GK
193075	Spike		mg/l		.020	76	1915	08/15/91	GK
				Antimony					
	Blank	<.1	mg/l				1910	08/07/91	GK
	Standard	1.2	mg/l	1.2		100	1910	08/07/91	GK
	Standard	5.1	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.1	mg/l	<.1		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	96	1910	08/07/91	GK
				Selenium					
	Blank	<.005	mg/l				2030	08/14/91	GK
	Standard	.097	mg/l	.100		103	2030	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
192237	Spike		mg/l		.100	108	2030	08/14/91	GK
				Silicon					
	Blank	.4	mg/l				1350	08/15/91	GDG
	Standard	4.9	mg/l	5.0		102	1350	08/15/91	GDG
	Standard	9.6	mg/l	10		104	1350	08/15/91	GDG
192240	Duplicate	8.1	mg/l	7.8		104	1350	08/15/91	GDG
192239	Spike		mg/l		2.0	95	1350	08/15/91	GDG
				Thallium					
	Blank	<.2	mg/l				1350	08/15/91	GDG
	Standard	.95	mg/l	1.0		105	1350	08/15/91	GDG
	Standard	5.2	mg/l	5.0		104	1350	08/15/91	GDG
192240	Duplicate	<.2	mg/l	<.2		100	1350	08/15/91	GDG
192239	Spike		mg/l		2.0	102	1350	08/15/91	GDG
				Vanadium					
	Blank	<.05	mg/l				1350	08/15/91	GDG
	Standard	1.0	mg/l	1.0		100	1350	08/15/91	GDG
	Standard	5.2	mg/l	5.0		104	1350	08/15/91	GDG
192240	Duplicate	<.05	mg/l	<.05		100	1350	08/15/91	GDG
192239	Spike		mg/l		2.0	102	1350	08/15/91	GDG
				Zinc					
	Blank	<.01	mg/l				1910	08/07/91	GK
	Standard	.41	mg/l	.40		102	1910	08/07/91	GK
	Standard	4.9	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.01	mg/l	<.01		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	101	1910	08/07/91	GK
				Benzene					
	Blank	<5.0	ug/l				0800	08/05/91	KB

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Quality Assurance for the SET with Sample 192239

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	115	0800	08/05/91	KB
				Ethyl benzene					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.4	ug/l	<0.4		100	0800	08/05/91	KB
192240	Spike				100	72	0800	08/05/91	KB
				Toluene					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	96	0800	08/05/91	KB
				Xylenes					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	70	0800	08/05/91	KB

BROMOFLUOROBENZENE

Ion Abundance Criteria

m/z	Min %	Max %	Mass	Actual	Status
50	15.0	40.0	95	15.2	PASS
75	30.0	60.0	95	43.0	PASS
95	100.0	---	---	100.0	PASS
96	5.0	9.0	95	5.6	PASS
173	---	2.0	174	0.0	PASS
174	50.0	---	95	97.9	PASS
175	5.0	9.0	174	5.1	PASS
176	95.0	101.0	174	100.0	PASS
177	5.0	9.0	176	5.1	PASS

DUPLICATE

Compound Name	Sample	Duplicate	Difference
Benzene	ND	ND	0%
Chlorobenzene	ND	ND	0%
1,1-Dichloroethene	ND	ND	0%
Toluene	ND	ND	0%

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Quality Assurance for the SET with Sample 192239

Trichloroethene	ND	ND	0%

SPIKE

Compound Name	Concent.	Sample	Recovery
Benzene	100	87.7	88%
1,1-Dichloroethene	100	66.4	66%
Trichloroethene	100	84.0	84%

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/26/91

JOB NUMBER: 911398 CUSTOMER: MARATHON OIL COMPANY

ATTN: W. NIXON

CLIENT I.D.....: 32-03-14S INDIAN BASIN
DATE SAMPLED.....: 07/22/91
TIME SAMPLED.....: 16:40
WORK DESCRIPTION...: #4

LABORATORY I.D...: 911398-0004
DATE RECEIVED....: 07/24/91
TIME RECEIVED....: 13:15
REMARKS.....:

BIEBELLE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	9.7	0.5	mg/L	325.2 (1)	07/25/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/25/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L Barbee

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/19/91

JOB NUMBER: 911323 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/15/91
TIME SAMPLED.....: 14:52
WORK DESCRIPTION...: #4

LABORATORY I.D...: 911323-0004
DATE RECEIVED....: 07/17/91
TIME RECEIVED....: 13:15
REMARKS.....:

BIEALLE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	11.3	0.5	mg/L	325.2 (1)	07/18/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/18/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY Linda L. Benbow

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LABORATORY TESTS RESULTS
07/12/91

JOB NUMBER: 911259 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/08/91
TIME SAMPLED.....: 13:05
WORK DESCRIPTION...: #4

LABORATORY I.D...: 911259-0004
DATE RECEIVED....: 07/10/91
TIME RECEIVED....: 13:15
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	10.9	0.5	mg/L	325.2 (1)	07/11/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/10/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burkes

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LABORATORY TESTS RESULTS
07/08/91

JOB NUMBER: 911228 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/01/91
TIME SAMPLED.....: 14:35
WORK DESCRIPTION...: #4

LABORATORY I.D...: 911228-0004
DATE RECEIVED....: 07/03/91
TIME RECEIVED....: 16:20
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	10.5	0.5	mg/L	325.2 (1)	07/08/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/04/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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PAGE:4

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LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 911153 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 06/24/91
TIME SAMPLED.....: 13:20
WORK DESCRIPTION...: 4

LABORATORY I.D...: 911153-0004
DATE RECEIVED....: 06/26/91
TIME RECEIVED....: 14:52
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	11.4	1	mg/L	325.2 (1)	06/28/91	0.
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/27/91	P
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David McWhorter

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LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 911062 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: IBOP PIPELINE LEAK 32-03-144
DATE SAMPLED.....: 06/17/91
TIME SAMPLED.....: 12:55
WORK DESCRIPTION...: 4

LABORATORY I.D...: 911062-0004
DATE RECEIVED....: 06/19/91
TIME RECEIVED....: 12:55
REMARKS.....:

BIEBELLE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH
Chloride (Unfilt.)	11.1	0.5	mg/L	325.2 (1)	06/21/91	PJR
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/20/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Daniel McCutchen

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LABORATORY TESTS RESULTS
06/17/91

JOB NUMBER: 911022 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.164 IBOP PIPELINE LEAK
DATE SAMPLED.....: 06/11/91
TIME SAMPLED.....: 11:14
WORK DESCRIPTION...: #4

LABORATORY I.D...: 911022-0004
DATE RECEIVED....: 06/13/91
TIME RECEIVED....: 16:06
REMARKS.....:

BIEBELLE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMIT/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	11.3	0.5	mg/L	325.2 (1)	06/14/91
Solids, Total Dissolved (TDS)	1020	10	mg/L	160.1 (1)	06/14/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/14/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen J. Nafzger

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LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 910948 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.164 18OP PIPELINE LEAK
DATE SAMPLED.....: 06/03/91
TIME SAMPLED.....: 11:07
WORK DESCRIPTION...: #4

LABORATORY I.D...: 910948-0006
DATE RECEIVED....: 06/05/91
TIME RECEIVED....: 16:11
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	11.2	0.5	mg/L	325.2 (1)	06/06/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/06/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910887 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27-98-810 MINERAL ASSAY
DATE SAMPLED.....: 05/27/91
TIME SAMPLED.....: 11:50
WORK DESCRIPTION...: #4

LABORATORY I.D...: 910887-0004
DATE RECEIVED....: 05/29/91
TIME RECEIVED....: 15:22
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Alkalinity, Total (Unfilt.)	260	5	mg/L CaCO3	310.1 (1)	06/03/91
Bicarbonate (Unfilt.)	318	5	mg/L	403 (3)	06/03/91
Carbonate (Unfilt.)	<1	1	mg/L	403 (3)	06/03/91
Chloride (Unfilt.)	11.1	0.5	mg/L	325.2 (1)	05/30/91
Conductivity (Unfilt.)	1210	1	umhos/cm @25dF	120.1 (1)	05/30/91
Hardness, Total (Unfilt.)	764	1	mg/L(as CaCO3)	314A (3)	06/20/91
Nitrogen, Nitrate (Unfilt.)	0.1	0.1	mg/L (as N)	353.2 (1)	06/13/91
pH (Unfilt.)	7.98	0.01	pH Units	150.1 (1)	06/03/91
Solids, Total Dissolved (TDS)	1050	10	mg/L	160.1 (1)	06/13/91
Sulfate (Unfilt.)	488	10	mg/L	375.3 (1)	06/19/91
Calcium, Total (Ca)	194	0.9	mg/L	200.7/6010 (1,2)	06/11/91
Iron, Total (Fe)	0.10	0.03	mg/L	200.7/6010 (1,2)	06/11/91
Magnesium, Total (Mg)	67.9	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Manganese, Total (Mn)	<0.01	0.01	mg/L	200.7/6010 (1,2)	06/11/91
Potassium, Total (K)	1.50	0.01	mg/L	258.1 (1)	06/20/91
Sodium, Total (Na)	13	1	mg/L	200.7/6010 (1,2)	06/11/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/29/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Donna McWhorter

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Gearhart Company

CORE LABORATORIES

ANALYTICAL REPORT
06/21/91

CUSTOMER: Marathon Oil Company File No.: 910887

CATION/ANION BALANCE

Client Sample I.D..... #4
Remark/Project..... 27-98-810 Mineral Assay
Date/Time Sampled..... 05-27-91/1150
Date/Time Received..... 05-29-91/1522
Laboratory Sample I.D..... 910887-4

PARAMETER	RESULT		UNITS
pH	7.98		pH Units
Conductivity at 29 degrees C	1210		umhos/cm
Alkalinity (as CaCO3)	260		mg/L
Total Diss. Solids (measured)	1050		mg/L
Total Diss. Solids (calculated)	935		mg/L
		meq/Liter	
Calcium (Ca)	194	9.68	mg/L
Magnesium (Mg)	67.9	5.59	mg/L
Sodium (Na)	13	0.57	mg/L
Potassium (K)	1.50	0.04	mg/L
Total Cations meq/Liter		15.87	
		meq/Liter	
Bicarbonate (HCO3)	318	5.21	mg/L
Carbonate (CO3)	ND(1)	0.00	mg/L
Hydroxide (OH)	ND(1)	0.00	mg/L
Chloride (Cl)	11.1	0.31	mg/L
Sulfate (SO4)	488	10.16	mg/L
Total Anions meq/Liter		15.69	
Cation-Anion Balance (RPD)	1.18 Percent		

ND = NOT DETECTED AT LEVEL SHOWN IN PARENTHESIS

Approved By: David McWhorter

1300 South Potomac, St., Suite 130
Aurora, Colorado 80012
Tele. (303) 751-1780

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Gearhart Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910852 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27 9B B10 MINERAL ASSAY
DATE SAMPLED.....: 05/20/91
TIME SAMPLED.....: 14:42
WORK DESCRIPTION...: 4

LABORATORY I.D...: 910852-0004
DATE RECEIVED....: 05/22/91
TIME RECEIVED....: 16:30
REMARKS.....:

BIEBELLE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH
Alkalinity, Total (Unfilt.)	259	5	mg/L CaCO3	310.1 (1)	05/28/91	KJZ
Bicarbonate (Unfilt.)	316	5	mg/L	403 (3)	05/28/91	KJZ
Carbonate (Unfilt.)	<1	1	mg/L	403 (3)	05/28/91	KJZ
Chloride (Unfilt.)	11.4	0.5	mg/L	325.2 (1)	05/24/91	DAM
Conductivity (Unfilt.)	1220	1	umhos/cm @25dF	120.1 (1)	05/24/91	MI
Hardness, Total (Unfilt.)	770	1	mg/L(as CaCO3)	314A (3)	06/20/91	TLI
Nitrogen, Nitrate (Unfilt.)	0.2	0.1	mg/L (as N)	353.2 (1)	06/11/91	DT.
pH (Unfilt.)	7.47	0.01	pH Units	150.1 (1)	05/28/91	KJ:
Solids, Total Dissolved (TDS)	951	10	mg/L	160.1 (1)	05/28/91	PJI
Sulfate (Unfilt.)	535	10	mg/L	375.2 (1)	06/12/91	DT
Calcium, Total (Ca)	195	0.5	mg/L	200.7/6010 (1,2)	06/11/91	TL
Iron, Total (Fe)	0.05	0.03	mg/L	200.7/6010 (1,2)	06/11/91	TL
Magnesium, Total (Mg)	68.7	0.5	mg/L	200.7/6010 (1,2)	06/11/91	TL
Manganese, Total (Mn)	<0.01	0.01	mg/L	200.7/6010 (1,2)	06/11/91	TL
Potassium, Total (K)	1.59	0.01	mg/L	258.1 (1)	06/20/91	TL
Sodium, Total (Na)	14	1	mg/L	200.7/6010 (1,2)	06/11/91	T
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/23/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David McWhorter

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Litton/Gearhart Company

CORE LABORATORIES

ANALYTICAL REPORT
06/21/91

CUSTOMER: Marathon Oil Company File No.: 9108852

CATION/ANION BALANCE

Client Sample I.D..... #2
Remark/Project..... 27-98-810 Mineral Assay
Date/Time Sampled..... 05-20-91/1442
Date/Time Received..... 05-22-91/1630
Laboratory Sample I.D..... 910852-4

BIEBELLE WATER WELL

PARAMETER	RESULT		UNITS
pH	7.47		pH Units
Conductivity at 25 degrees C	1220		umhos/cm
Alkalinity (as CaCO3)	259		mg/L
Total Diss. Solids (measured)	951		mg/L
Total Diss. Solids (calculated)	984		mg/L
		meq/Liter	
Calcium (Ca)	195	9.73	mg/L
Magnesium (Mg)	68.7	5.65	mg/L
Sodium (Na)	14	0.61	mg/L
Potassium (K)	1.59	0.04	mg/L
Total Cations meq/Liter		16.03	
		meq/Liter	
Bicarbonate (HCO3)	316	5.18	mg/L
Carbonate (CO3)	ND(1)	0.00	mg/L
Hydroxide (OH)	ND(1)	0.00	mg/L
Chloride (Cl)	11.4	0.32	mg/L
Sulfate (SO4)	535	11.14	mg/L
Total Anions meq/Liter		16.64	
Cation-Anion Balance (RPD)	3.71 Percent		

ND = NOT DETECTED AT LEVEL SHOWN IN PARENTHESIS

Approved By: David McWilliams

1300 South Potomac, St., Suite 130
Aurora, Colorado 80012
Tele. (303) 751-1780

WATER CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD, ALBUQUERQUE, NM 87106
Water Chemistry Section - Telephone: (505) 841-2555

SLD No. 1 •

Request ID No. 011310-B

Date Received:

2 User Code #: 710 12 10

3 Request ID No.:

4 Priority Code #: [ ] (1 or 2, call SID-SLD Coordinator)

5 Facility Name: Biebelle Ranch

6 County: Eddy

7 City: CARLSBAD

8 State: NM

9 Sample Location: WELL # C-1332 646 QUEEN RT 137

10 Collected By: BARRY BIRCH (First / Last) On: 91/05/15 (Date: YY/MM/DD) At: 1005 hrs. (Time: 24 hr. clock 3:00 pm = 1500 hrs.)

11 Codes: 0063 (Submitter) - (WSS #) . (Organization)

12 Latitude (DDMMSS) ° ' "

Longitude (DDDMMSS) ° ' " W

2 Digit ID (if needed)

13 Report To: Name: David G. Boyer

14 Phone #: (505) 827-5812

Address: New Mexico Oil Conservation Division

P. O. 2088

City, State Zip: Santa Fe, New Mexico 87504-2088

15 Sample Purpose:
- [ ] Compliance
- [ ] Check
- [ ] Monitoring
- [X] Special

Sampling Information:
- [X] Grab
- [ ] Composite _____ (Composite Time Period)
- [ ] Flow Proportioned
- [ ] Equal Aliquot
- [ ] Sample Split w/Permittee
- [ ] Chain of Custody

16 Field Data: pH: _____, Conductivity: _____ umhos @ _____ °C, Temperature: _____ °C, Chlorine Residual: _____ mg/l, Flow: _____

17 Sample Source:
- [ ] -Stream
- [ ] -Lake
- [ ] -Drain
- [ ] -Pool
- [ ] -WWTP
- [X] -Well; Depth: _____
- [ ] -Spring
- [ ] -Distribution
- [ ] -Point-of-Entry
- [ ] -Other: _____

18 Field Notes/ Sample @:
SW SE SW Sec 23, T21S, R24E

19 Sample Type: [X] -Water, [ ] -Soil, [ ] -Food, [ ] -Wastewater, [ ] -Other _____

This form accompanies a single sample consisting of:
1 - 1 liter cubitainers (1 quart)
_____ - 4 liter cubitainers (1 gallon)
_____ - _____

20 Preservation:
- [ ] -WNF Water Not Preserved; Filtered
- [X] -WNN Water Not Preserved; Not Filtered
- [ ] -WPF Water Preserved with Sulfuric Acid (H2SO4); Filtered
- [ ] -WPN Water Preserved with Sulfuric Acid; Not Filtered
- [ ] -WNL Water Not Preserved in Field; Please Add H2SO4 at Lab
- [ ] -ICE Water Iced
- [ ] -Other _____

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analyses required.

Group Analyses:
- [ ] -(854) SDWA Group II (Nitrate as N)
- [ ] -(851) SDWA Group III (Fluoride)
- [ ] -(860) SDWA Complete Secondary
- [ ] -(859) SWQB SS Anion - Cation Group +
- [ ] -(868) SWQB NPS Anion, Cation, Physical + TSS
- [ ] -(869) SWQB Nutrient Analysis Group +
- [X] -(867) Major Anions & Cations

Cations:
- [X] -Calcium (as Ca) _____
- [X] -Magnesium (as Mg) _____
- [X] -Potassium (as K) _____
- [X] -Sodium (as Na) _____
- [X] -Total Hardness (as CaCO3) _____

Anions:
- [X] -Alkalinity (as CaCO3) _____
- [ ] -Bicarbonate (as HCO3) _____
- [X] -Carbonate (as CO3) _____
- [X] -Chloride (as Cl) _____
- [X] -Fluoride (as F) _____
- [X] -Sulfate (as SO4) _____
- [X] -Ion Charge Balance _____

Physical Parameters:
- [ ] -Color _____
- [X] -Conductance (Micromhos @ 25 C) _____
- [ ] -Odor _____
- [X] -pH _____
- [ ] -Surfactants _____
- [X] -Total Dissolved Solids _____
- [ ] -Turbidity _____

Other:
- [ ] - _____ _____
- [ ] - _____ _____
- [ ] - _____ _____
- [ ] - _____ _____

Surface and Waste Water:
- [ ] -Biological Oxygen Demand _____
- [ ] -Total Suspended Solids _____
- [ ] -Chemical Oxygen Demand _____
- [ ] -Total Organic Carbon _____
- [ ] -Cyanide _____

Nutrients:
- [ ] -Nitrate + Nitrite (as N) _____
- [ ] -Ammonia (as N) _____
- [ ] -Total Kjeldahl (as N) _____
- [ ] -Nitrite (as N) _____
- [ ] -Orthophosphate (as P) _____
- [ ] -Total Phosphorus (as P) _____

Remarks: Call Collector @ (505) 885-9023 with results

Copies for: Barry Birch, NMED, 406 N. Guadalupe St, Carlsbad, NM 88220; Walter Biebelle, 646 Queen Rt, Carlsbad, NM 88220; OCD, Drawer DD, Artesia, NM 88210

SLD 8912-WC Form New 12/89 This Form Will NOT Be Returned With Your Results. Please RETAIN A COPY!

STATE OF NEW MEXICO DEPARTMENT OF HEALTH

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700 700 Camino de Salud, NE
Albuquerque, NM 87196-4700 [505]-841-2500
WATER CHEMISTRY SECTION [505]-841-2555

July 19, 1991

Request ID No. 011310

ANALYTICAL REPORT
SLD Accession No. WC-91-1283

Distribution
(_) User 70320
(▣) Submitter 63
(※) SLD Files

To: David G. Boyer
New Mexico Oil Conservation Division
P.O. 2088
Santa Fe, New Mexico 87504-2088

From: Water Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: **A water,Nonpres/No sample submitted to this laboratory on May 16, 1991**

DEMOGRAPHIC DATA

COLLECTION
On: 15-May-91 *By:* Bir . . .
At: 10:05 hrs. *In/Near:* Carlsbad

LOCATION
Well #C-1332 646 Queen Rt 137

ANALYTICAL RESULTS

Analysis	Value	D. Lmt.	Units
calcium	209.10		mG/L
magnesium	73.40		mG/L
potassium	8.00		mG/L
sodium	16.00		mG/L
hardness	824.00		mG/L
alkalinity	255.00		mG/L
bicarbonate	312.00		mG/L
carbonate	0.00		mG/L
chloride	13.40		mG/L
fluoride	0.46		mG/L
sulfate	560.00		mG/L
Ion Balance	101.00		%
conductance	1223.00		uS/cm
pH	7.50		pH units
TDS	942		mg/L

Reviewed By: John A. Finney 07/16/91
Supervisor, Water Chemistry Section

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-2570

SLD No. 1

Date Received:

Request ID No. 011309-C

2 User Code #: 70320 | 3 Request ID No.: | 4 Priority Code #: (If "1" or "2", call EID-SLD Coordinator)

Facility Name: BIEBELLE RANCH | 6 County: EDDY | 7 City: CARLSBAD | 8 State: NM

9 Sample Location: WELL #C-1332 646 QUEEN RT 137

10 Collected By: Barry (First) BIRCH (Last) On: 9/10/14 (Date: YY/MM/DD) At: 1410 hrs. (Time: 24 hr. clock 3:00 pm = 1500 hrs.)

11 Codes: 0063 Submitter | WSS # | Organization

12 Latitude (DDMMSS) ° ' "
Longitude (DDDMMSS) ° ' "
2 Digit ID (If needed)

13 Report To: (Name) DAVID G BOYER | 14 Phone #: (505)827-5812

Address: NMOCD
PO BOX 2088

City, State Zip: SANTA FE, NM 87504-2088

15 Sample Purpose:
- [ ] Compliance
- [ ] Check
- [ ] Monitoring
- [x] Special

Sampling Information:
- [ ] Grab
- [ ] Composite _____ (Composite Time Period)
  - [ ] Flow Proportioned
  - [ ] Equal Aliquot
- [ ] Sample Split w/Permittee
- [ ] Chain of Custody

16 Field Data: pH: _____, Conductivity: _____ umhos @ _____ °C, Temperature: _____ °C, Chlorine Residual: _____ mg/l, Flow: _____

17 Sample Source:
- [ ] Stream
- [ ] Lake
- [ ] Drain
- [ ] Pool
- [ ] WWTP
- [x] Well; Depth: _____
- [ ] Spring
- [ ] Distribution
- [ ] Point-of-Entry
- [ ] Other: _____

18 Field Notes/Sample #: SWSESW Sec. 23, T 21S, R 24E
7mi west on 137 from 285. Tank drain at well-head

19 Sample Type: [x] Water, [ ] Soil, [ ] Food, [ ] Wastewater, [ ] Other _____
This form accompanies a single sample consisting of:
2 - septum vial(s) (volume = 40ml)
_____ - glass jugs (volume = _____)
_____ - _____ (volume = _____)

20 Preservation:
- [ ] NP No Preservation; Sample stored at room temperature
- [x] P-Ice Sample stored in an ice bath (Not Frozen)
- [ ] P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual
- [x] P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
- [ ] Other _____

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.

Volatile Screens:

- [ ] (753) Aliphatic Headspace (1-5 Carbons)
- [ ] (754) Aromatic & Halogenated Purgeables (EPA 601 & 602)
- [ ] (765) Mass Spectrometer Purgeables (EPA 624)
- [ ] (766) SDWA Total Trihalomethanes (EPA 501.1)
- [ ] (774) SDWA VOC's I [8 Regulated +] (EPA 502.2)
- [x] (775) SDWA VOC's II [EDB & DBCP] (EPA 504)

Other Specific Compounds or Classes:

- [ ] - ( ) _____
- [ ] - ( ) _____
- [ ] - ( ) _____

Semivolatile Screens:

- [ ] (763) Acid Extractables
- [ ] (751) Aliphatic Hydrocarbons
- [ ] (755) Base/Neutral Extractables (EPA 625)
- [ ] (756) Base/Neutral/Acid Extractables (EPA 8270)
- [ ] (758) Herbicides, Chlorophenoxy Acid
- [ ] (759) Herbicides, Triazines
- [ ] (760) Organochlorine Pesticides
- [ ] (761) Organophosphate Pesticides
- [ ] (767) Polychlorinated Biphenyls (PCB's)
- [ ] (764) Polynuclear Aromatic Hydrocarbons
- [ ] (762) SDWA Pesticides & Herbicides

Remarks: Call collector @ (505) 885-9023 with results
Copy to: Barry Birch NMED, 406 N. Guadalupe St. Carlsbad, NM 88220
Walter Biebelle, 646 Queen Rt, Carlsbad, NM 88220
OCD, ARTESIA DD, Artesia, NM 88210.

STATE OF NEW MEXICO DEPARTMENT OF HEALTH

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700 700 Camino de Salud, NE
Albuquerque, NM 87196-4700 [505]-841-2500
ORGANIC CHEMISTRY SECTION [505]-841-2570

OIL CONSERVATION DIVISION RECEIVED
'91 MAY 31 AM 8 44

May 24, 1991

Request ID No. 011309

ANALYTICAL REPORT
SLD Accession No. OR-91-1767

Distribution
(__) User 70320
(■) Submitter 63
(※) SLD Files

To: David G. Boyer
NMOCD
P.O. Box 2088
Santa Fe, NM 87504-2088

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: **A water, Extractab sample submitted to this laboratory on May 15, 1991**

DEMOGRAPHIC DATA

COLLECTION		*LOCATION*
On: 14-May-91	*By:* Bir . . .	Well #c-1332 646 Queen rt 137
At: 14:10 hrs.	*In/Near:* Carlsbad	

ANALYTICAL RESULTS: SDWA VOC's II [EPA-504] Screen (775)

Parameter	Value	Note	MDL	Units
1,2-Dibromoethane (EDB)	0.00	N	0.04	ppb
1,2-Dibromo-3-chloropropane	0.00	N	0.04	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified; T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Evidentiary Seals: Not Sealed ☑; Intact: No ☐, Yes ☐ & Broken By: _____ Date: _____

Laboratory Remarks:

SAFE DRINKING WATER ACT VOLATILES-II

Lab Name: NM SCIENTIFIC LABORATORY DIVISION Contract: N/A
Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: N/A
Matrix: (soil/water) Water Lab Sample ID: OR-91-1767
Sample wt/vol: 35 ml (g/mL) ml Lab File ID: N/A
Level: (low/med) Low Date Received: 5/15/91
% Moisture: not dec. N/A dec. N/A Date Extracted: 5/17/91

(Continued on page 2.)

ANALYTICAL REPORT
SLD Accession No. OR-91-1767
Continuation, Page 2 of 2

Extraction: (SepF/Cont/Sonc) Micro
GPC Cleanup: (Y/N) No pH: _____

Date Analyzed: 5/17/91
Dilution Factor: 1
CONCENTRATION UNITS:
(ug/L or ug/Kg): ug/L

EPA Method 504 was used to analyze for the following compounds

CAS NO.	COMPOUND	CONC.	QUALIFIER
106-93-4	1,2-Dibromoethane (EDB)	0.04	U
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	0.04	U

* Qualifier Definitions:

B - Indicates compound was detected in the Lab Blank as well as in the sample.
D - Indicates value taken from a secondary (diluted) sample analysis.
E - Indicates compound concentration exceeded the range of the standard curve.
J - Indicates an estimated value for tentatively identified compounds, or for compounds detected and identified but present at a concentration less than the quantitation limit.
N - Indicates that more than one peak was used for quantitation.
U - Indicates compound was analyzed for, but not detected at a concentration greater than the concentration listed.

Analyst: _____
Jim Chasey
Analyst, Organic Chemistry

Reviewed By: _____
Richard F. Meyerhein 05/23/91
Supervisor, Organic Chemistry Section

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-2570

SLD No. 1

Request ID No. 011308-C

Date Received:

2 User Code #: 70320

3 Request ID No.:

4 Priority Code #: 3 [If "1" or "2", call EID-SLD Coordinator]

5 Facility Name: BIEBELLE RANCH

6 County: EDDY

7 City: CARLSBAD

8 State: NM

9 Sample Location: WELL # C-1332 646 QUEEN RT 137

10 Collected By: Barry BIRCH (First / Last) On: 9/05/14 (Date: YY/MM/DD) At: 1402 hrs. (Time: 24 hr. clock, 3:00 pm = 1500 hrs.)

11 Codes: 0063 (Submitter) - (WSS #) (Organization)

12 Latitude (DDMMSS) ° ' "
Longitude (DDDMMSS) ° ' "
2 Digit ID (If needed)

13 Report To: Name: DAVID G. BOYER

14 Phone #: (505)827-5812

Address: NMOCD
PO BOX 2088

City, State Zip: SANTA FE, NM 87504-2088

15 Sample Purpose:
- [ ] Compliance
- [ ] Check
- [ ] Monitoring
- [X] Special

Sampling Information:
- [ ] Grab
- [ ] Composite _____ (Composite Time Period)
  - [ ] Flow Proportioned
  - [ ] Equal Aliquot
- [ ] Sample Split w/Permittee
- [ ] Chain of Custody

16 Field Data: pH: _____, Conductivity: _____ umhos @ _____ °C, Temperature: _____ °C, Chlorine Residual: _____ mg/l, Flow: _____

17 Sample Source:
- [ ] Stream
- [ ] Lake
- [ ] Drain
- [ ] Pool
- [ ] WWTP
- [X] Well; Depth: _____
- [ ] Spring
- [ ] Distribution
- [ ] Point-of-Entry
- [ ] Other: _____

18 Field Notes/ Sample #: SW SE SW Sec 23, T 21S, R 24E
7 mi West on 137 from 285. Tank drain at well-head

19 Sample Type: [X] Water, [ ] Soil, [ ] Food, [ ] Wastewater, [ ] Other _____
This form accompanies a single sample consisting of:
2 - septum vial(s) (volume = 40ml)
_____ - glass jugs (volume = _____)
_____ - _____ (volume = _____)

20 Preservation:
- [ ] NP No Preservation; Sample stored at room temperature
- [X] P-Ice Sample stored in an ice bath (Not Frozen)
- [ ] P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual
- [X] P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
- [ ] Other _____

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.

Volatile Screens:

- [ ] (753) Aliphatic Headspace (1-5 Carbons)
- [ ] (754) Aromatic & Halogenated Purgeables (EPA 601 & 602)
- [ ] (765) Mass Spectrometer Purgeables (EPA 624)
- [ ] (766) SDWA Total Trihalomethanes (EPA 501.1)
- [X] (774) SDWA VOC's I [8 Regulated +] (EPA 502.2)
- [ ] (775) SDWA VOC's II [EDB & DBCP] (EPA 504)

Other Specific Compounds or Classes:

- [ ] - ( ) _____
- [ ] - ( ) _____
- [ ] - ( ) _____

Semivolatile Screens:

- [ ] (763) Acid Extractables
- [ ] (751) Aliphatic Hydrocarbons
- [ ] (755) Base/Neutral Extractables (EPA 625)
- [ ] (756) Base/Neutral/Acid Extractables (EPA 8270)
- [ ] (758) Herbicides, Chlorophenoxy Acid
- [ ] (759) Herbicides, Triazines
- [ ] (760) Organochlorine Pesticides
- [ ] (761) Organophosphate Pesticides
- [ ] (767) Polychlorinated Biphenyls (PCB's)
- [ ] (764) Polynuclear Aromatic Hydrocarbons
- [ ] (762) SDWA Pesticides & Herbicides

Remarks: Call Collector @ (505) 885-9023 with results
Copy to: Barry Birch, NMED, 406 N. Guadalupe St, Carlsbad, NM 88220.
Walter Biebelle, 646 Queen Rt, Carlsbad, NM 88220
OCD, Drawer D.D., Artesia, NM 88210.

SLD 8912-OR Form New 12/89 This Form Will NOT Be Returned With Your Results. Please RETAIN A COPY!

STATE OF NEW MEXICO DEPARTMENT OF HEALTH
SCIENTIFIC LABORATORY DIVISION
P.O. Box 4700 700 Camino de Salud, NE
Albuquerque, NM 87196-4700 [505]-841-2500
ORGANIC CHEMISTRY SECTION [505]-841-2570

June 11, 1991

Request ID No. 011308

ANALYTICAL REPORT
SLD Accession No. OR-91-1766

Distribution
(__) User 70320
(X) Submitter 63
(X) SLD Files

To: David G. Boyer
NMOCD
P.O. Box 2088
Santa Fe, NM 87504-2088

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: **A water, purgeable sample submitted to this laboratory on May 15, 1991**

DEMOGRAPHIC DATA

COLLECTION
On: 14-May-91 *By:* Bir . . .
At: 14:00 hrs. *In/Near:* Carlsbad

LOCATION
well #c-1332 646 Queen rt 137

ANALYTICAL RESULTS: SDWA VOC's I [EPA-502.2] Screen {774}

Parameter	Value	Note	MDL	Units
SDWA VOC's-I (63)	0.00	N	1.00	ppb

See Laboratory Remarks for Additional Information

Notations & Comments:
MDL = Minimal Detectable Level.
A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified;
T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.
Evidentiary Seals: Not Sealed[X]; Intact: No[ ], Yes[ ] & Broken By: _____ Date: _____

Laboratory Remarks:

SAFE DRINKING WATER ACT
VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: NM SCIENTIFIC LABORATORY DIVISION Contract: N/A
Lab Code: N/A Case No.: N/A SAS No.: N/A SDG No.: N/A
Matrix: (soil/water) Water Lab Sample ID: OR-91-1766
Sample wt/vol: 5.0 (g/mL) mL Lab File ID: N/A
Level: (low/med) Low Date Received: 5/15/91
% Moisture: not dec. N/A dec. N/A Date Extracted: N/A
Extraction: (SepF/Cont/Sonc) N/A Date Analyzed: 5/17/91
GPC Cleanup: (Y/N) No pH: _____ Dilution Factor: 1
CONCENTRATION UNITS:
(ug/L or ug/Kg): ug/L

This sample was analyzed for the following compounds

(Continued on page 2.)

using EPA Method 502.2

CAS NO.	COMPOUND	CONC.	QUALIFIER
67-64-1	Acetone	5.0	U
71-43-2	Benzene	1.0	U
108-86-1	Bromobenzene	1.0	U
74-97-5	Bromochloromethane	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
24-83-9	Bromomethane	1.0	U
78-93-3	2-Butanone (MEK)*	5.0	U
104-51-8	n-Butylbenzene	1.0	U
135-98-8	sec-Butylbenzene	1.0	U
98-06-6	tert-Butylbenzene	1.0	U
1634-04-4	tert-Butyl methyl ether (MTBE)*	5.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
95-49-8	2-Chlorotoluene	1.0	U
106-43-4	4-Chlorotoluene	1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	1.0	U
124-48-1	Dibromochloromethane	1.0	U
106-93-4	1,2-Dibromoethane	1.0	U
74-95-3	Dibromomethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
75-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
142-28-9	1,3-Dichloropropane	1.0	U
590-20-7	2,2-Dichloropropane	1.0	U
563-58-6	1,1-Dichloropropene	1.0	U
1006-01-5	cis-1,3-Dichloropropene	1.0	U
1006-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethylbenzene	1.0	U
87-68-3	Hexachlorobutadiene	1.0	U

(Continued on page 3.)

98-82-8	Isopropylbenzene	1.0	U
99-87-6	4-Isopropyltoluene	1.0	U
75-09-2	Methylene chloride	5.0	U
91-20-3	Naphthalene	1.0	U
103-65-1	Propylbenzene	1.0	U
100-42-5	Styrene	1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
109-99-9	Tetrahydrofuran (THF)*	5.0	U
108-88-3	Toluene	1.0	U
87-61-5	1,2,3-Trichlorobenzene	1.0	U
120-82-1	1,2,4-Trichlorobenzene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
96-18-4	1,2,3-Trichloropropane	1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	U
75-01-4	Vinyl chloride	1.0	U
95-47-6	o-Xylene	1.0	U
N/A	p- & m-Xylene	1.0	U

* Non-Regulated Compounds

Qualifier Definitions:
B - Indicates compound was detected in the Lab Blank as well as in the sample.
D - Indicates value taken from a secondary (diluted) sample analysis.
E - Indicates compound concentration exceeded the range of the standard curve.
J - Indicates an estimated value for tentatively identified compounds, or for compounds detected and identified but present at a concentration less than the quantitation limit.
N - Indicates that more than one peak was used for quantitation.
U - Indicates compound was analyzed for, but not detected.

QUALITY CONTROL SUMMARY FOR VOLATILES SCREEN

METHOD BLANK: A laboratory method blank was analyzed along with this sample to assure the absence of interfering contaminants

(Continued on page 4.)

from lab reagents, instruments, or the general laboratory environment. Unless listed below, no contaminants were detected in this blank above the reported detection limit.

COMPOUND DETECTED	CONCENTRATION (PPB)
No Compounds Detected	

SURROGATE RECOVERIES:

SURROGATE	CONCENTRATION	% RECOVERY
Fluorobenzene	25.0 ppb	99.76
2-Bromo-1-chloropropane	15.0 ppb	96.

SPIKE RECOVERY: The % recoveries for compounds in the batch spike were from 80% to 120% with the exception of the compounds listed below:

COMPOUND	CONCENTRATION	% RECOVERY
Vinyl chloride	25. ppb	122.4
1,2-Dichloroethane	25. ppb	66.0

Analyst: Gary C. Eden
Analyst, Organic Chemistry

Reviewed By: Richard F. Meyerhein 06/06/91
Supervisor, Organic Chemistry Section

Bicbelle Temp. Pond

Western Atlas International
A Litton·Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/29/91

JOB NUMBER: 911607 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/22/91
TIME SAMPLED.....: 11:10
WORK DESCRIPTION...: BEIBELLES POND

LABORATORY I.D...: 911607-0001
DATE RECEIVED....: 08/27/91
TIME RECEIVED....: 14:36
REMARKS.....:

STOCK POND WHICH EXISTED FOLLOWING RAIN FALL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	0.9	0.5	mg/L	325.2 (1)	08/29/91	I
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/29/91	HI
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Walter T. Barbee

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Gregory
Correspondence

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

New Mexico DRUG FREE It's a State of Mind!

BRUCE KING
GOVERNOR

October 21, 1991

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

RE: OCD WATER WELL ANALYSIS

Dear Mr. Gregory:

On July 29, representatives of the New Mexico Oil Conservation Division (OCD) and Marathon Oil sampled a natural spring in Rocky Arroyo (Arroyo Spring Water) that you use for cattle watering to determine if contamination may have occurred as a result of the leak from a flow line in Marathon's Indian Basin Field. Samples taken by OCD were analyzed for hydrocarbons, solvents, heavy metals and general water chemistry at our contract laboratory, ANA-LAB, in Kilgore, Texas. The sample analyses have been received and are attached.

The results of the sampling show that no hydrocarbons or abnormally high levels of inorganic constituents are present. The water can be characterized as a calcium-sulfate water whereas the water lost in the pipeline break is best described as a sodium-chloride water mixed with hydrocarbons. I enclose a list of water quality standards compiled by the NM Environment Department so that you can compare your results.

If you have any questions about the analyses or wish further information, please contact Bill Olson at 827-5812.

Sincerely,

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

Attachment

cc : OCD Artesia District Office

Mid-Continent Region
Production United States

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

October 3, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from the water samples obtained on September 24, 1991 from a natural spring located in Rocky Arroyo are attached. In discussing this water source with Mr. Biebelle, he indicated that the water it supplies is utilized by the Biebelle's for stock water, and also by you for stock water. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

September 19, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from the water samples obtained on September 9, 1991 from a natural spring located in Rocky Arroyo are attached. In discussing this water source with Mr. Biebelle, he indicated that the water it supplies is utilized by the Biebelle's for stock water, and also by you for stock water. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

September 10, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from the water samples obtained on August 26, 1991 from a natural spring located in Rocky Arroyo are attached. In discussing this water source with Mr. Biebelle, he indicated that the water it supplies is utilized by the Biebelle's for stock water, and also by you for stock water. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Please note that at your specific request, the results are no longer being sent to you by registered mail. Plans are to continue sending you analytical results by ordinary mail in the future, unless you indicate otherwise.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 28, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from the water samples obtained on August 19, 1991 from a natural spring located in Rocky Arroyo are attached. In discussing this water source with Mr. Biebelle, he indicated that the water it supplies is utilized by the Biebelle's for stock water, and also by you for stock water. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 726

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 20, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from the water samples obtained on August 12, 1991 from a natural spring located in Rocky Arroyo are attached. In discussing this water source with Mr. Biebelle, he indicated that the water it supplies is utilized by the Biebelle's for stock water, and also by you for stock water. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 718

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 13, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from the water samples obtained on August 4, 1991 from a natural spring located in Rocky Arroyo are attached. In discussing this water source with Mr. Biebelle, he indicated that the water it supplies is utilized by the Biebelle's for stock water, and also by you for stock water. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 713

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 5, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from the water samples obtained on July 29, 1991 from a natural spring located in Rocky Arroyo are attached. In discussing this water source with Mr. Biebelle, he indicated that the water it supplies is utilized by the Biebelle's for stock water, and also by you for stock water. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 707

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 29, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from the water samples obtained on July 15, 1991 and July 22, 1991 from a natural spring located in Rocky Arroyo are attached. In discussing this water source with Mr. Biebelle, he indicated that the water it supplies is utilized by the Biebelle's for stock water, and also by you for stock water. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 703

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 15, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from the water samples obtained from your well on July 8, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 701

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 10, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from the water samples obtained from your well on July 1, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 695

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 2, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from the water samples obtained from your well on June 3, 1991 and June 24, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 692

Mid-Continent Region
Production United States

OIL CONSERV[illegible]ON DIVISION
RE[illegible]VED
'91 JUL 1 AM 9 51

Marathon Oil Company
P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

June 27, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from water samples obtained on May 20, 1991 and May 27, 1991 from a natural spring located in Rocky Arroyo are attached. In discussing this water source with Mr. Walter Biebelle, he indicated that the water it supplies is utilized by the Biebelle's for stock water, and also by you for stock water. No hydrocarbons or abnormally high chloride concentrations were found to be present. You may note that one of the attached reports contains results for numerous other parameters. The Environmental Bureau of the New Mexico Oil Conservation Division requested that this one-time analyses be conducted to appropriately characterize the water. The results indicate that the sampled water is typical, as compared to other waters in this area.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of the water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of the water from the released fluids described above. The results of these analyses indicate the water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of the water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 688

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

June 26, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Re: Water Well Analysis

Dear Mr. Wayne Gregory:

Final analytical results from water samples obtained on June 11, 1991 and June 17, 1991 from a natural spring located in Rocky Arroyo are attached. In discussing this water source with Mr. Walter Biebelle, he indicated that the water it supplies is utilized by the Biebelle's for stock water, and also by you for stock water. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of the water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of the water from the released fluids described above. The results of these analyses indicate the water to be within standards for these parameters as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of the water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 685

Mid-Continent Region
Product[illegible] United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

May 28, 1991

Mr. Wayne Gregory
617 Queens Highway
Carlsbad, New Mexico 88220

Certified Mail
Return Receipt Requested

Re: Water Analysis

Dear Mr. Gregory:

Final analytical results from a water sample obtained on May 12, 1991 from a natural spring located in Rocky Arroyo are attached. In discussing this water source with Mr. Walter Biebelle, he indicated that the water it supplies is utilized by the Biebelle's for stock water, and also by you for stock water. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me through the Indian Basin Gas Plant, 457-2621, or collect through Marathon's Midland Office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental & Safety Supervisor

Attachments
AJK/lgh

cc: D. G. Boyer (NMOCD - Santa Fe)
D. L. Manus (BLM - Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

ARROYO Spring Water

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Litton/Gearhart Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
10/01/91

JOB NUMBER: 911797 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 09/24/91
TIME SAMPLED.....: 09:34
WORK DESCRIPTION...: 5

LABORATORY I.D...: 911797-0005
DATE RECEIVED....: 09/26/91
TIME RECEIVED....: 15:40
REMARKS.....:

Arroyo Spring Water

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	8.2	0.5	mg/L	325.2 (1)	09/27/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/30/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L. Barbee

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
09/13/91

JOB NUMBER: 911689 CUSTOMER: MARATHON OIL COMPANY ATTN: DAVID LOUCH

CLIENT I.D.....: 32-03-144 IBGP PIPELINE
DATE SAMPLED.....: 09/09/91
TIME SAMPLED.....: 15:22
WORK DESCRIPTION...: 5

LABORATORY I.D...: 911689-0005
DATE RECEIVED....: 09/11/91
TIME RECEIVED....: 15:25
REMARKS.....:

ARROYO SPRING WATER

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	8.2	0.5	mg/L	325.2 (1)	09/12/91	I
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/12/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J Naegger

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Litton Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/30/91

JOB NUMBER: 911616 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/26/91
TIME SAMPLED.....: 13:47
WORK DESCRIPTION...: 5

LABORATORY I.D...: 911616-0005
DATE RECEIVED....: 08/28/91
TIME RECEIVED....: 15:26
REMARKS.....: BROWN PARTICLES IN SAMPLE

ARROYO SPRING WATER

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE T
Chloride (Unfilt.)	7.6	0.5	mg/L	325.2 (1)	08/29/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/29/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen J. Hoffer

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

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A Litton/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/23/91

JOB NUMBER: 911575 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/19/91
TIME SAMPLED.....: 12:22
WORK DESCRIPTION...: 5

LABORATORY I.D...: 911575-0005
DATE RECEIVED....: 08/21/91
TIME RECEIVED....: 16:06
REMARKS.....: LT. BROWN PARTICLES IN VOA

ARROYO SPRING WATER

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	5.4	0.5	mg/L	325.2 (1)	08/21/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/22/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Nappier

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Aurora, CO 80012
(303) 751-1780

Western Atlas International
A Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/16/91

JOB NUMBER: 911529 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/12/91
TIME SAMPLED.....: 11:55
WORK DESCRIPTION...: 5

LABORATORY I.D...: 911529-0005
DATE RECEIVED....: 08/14/91
TIME RECEIVED....: 13:25
REMARKS.....:

ARROYO SPRING WATER

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	9.7	0.5	mg/L	325.2 (1)	08/15/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/15/91	P
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Buckner

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/08/91

JOB NUMBER: 911476 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/04/91
TIME SAMPLED.....: 10:42
WORK DESCRIPTION...: S

LABORATORY I.D...: 911476-0004
DATE RECEIVED....: 08/06/91
TIME RECEIVED....: 13:55
REMARKS.....: 1 VOA HAS BUBBLE (CL ONLY)

ARROYO SPRING WATER

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE T
Chloride (Unfilt.)	9.4	0.5	mg/L	325.2 (1)	08/08/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/07/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Eddie J. Hayes

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/02/91

JOB NUMBER: 911436 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/29/91
TIME SAMPLED.....: 11:45
WORK DESCRIPTION...: S

LABORATORY I.D...: 911436-0005
DATE RECEIVED....: 07/31/91
TIME RECEIVED....: 15:15
REMARKS.....:

ARROYO SPRING WATER

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (unfilt.)	9.2	0.5	mg/L	325.2 (1)	08/01/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/01/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L. Burbea

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

ANA-LAB CORP.
THE COMPLETE SERVICE LAB

2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • *Utility Operations*

OIL CONSERVATION DIVISION

'91 SEP 17 AM 8 45

09/11/91

RECEIVED

SEP 17 1991

OIL CONSERVATION DIV.
SANTA FE

Environmental Bureau NM Oil D.
PO Box 2088
Santa Fe, NM 87504

Sample Identification: Spring Feeding Surface Water
Collected By: JR/DB
Date & Time Taken: 07/29/91 1145
On Site Data: Marathon Indian Basin Location 5
Other:

Rocky Arroyo, Gas plant, east of plant and upstream of 1st road crossing.
pH 6.5(strip), Water Temp 20.5, Sample type: Grab, Conductivity 170.

Lab Sample Number: 192240 **Received:** 07/31/91 Client: SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	220	mg/l as C	1900	08/13/91	EPA Method 310.1	BW
Boron	<.5	mg/l	1700	08/09/91	EPA Method 212.3	MB
Bromide	4	mg/l	1200	08/16/91	ASTM D3869 vol 11.02	ES
Cation-Anion Balance	12.5/12.0	meq/meq	1600	09/10/91		SK
Carbonate	.7	mg/l	1600	08/14/91	APHA Method 263	BC
Calulated Total Dissolved Solids	780	ppm	1500	09/06/91	APHA Method 1030F	BP2
Specific Conductance	785	Micromhos	0030	08/01/91	EPA Method 120.1	SB
Fluoride	1.3	mg/l	1400	08/06/91	EPA Method 340.1	BC
Bicarbonate	250	mg/l	1600	08/14/91	APHA Method 263	BC
Sulfate	300	mg/l	1230	08/14/91	EPA Method 375.4	MB
pH	7.2	SU	0100	08/01/91	EPA Method 150.1	SB
Chloride	11	mg/l	1300	08/12/91	EPA Method 325.3	HG
Silver	<.01	mg/l	1910	08/07/91	EPA Method 6010	GK
Aluminum	<.03	mg/l	1400	08/06/91	EPA Method 6010	GK
Arsenic	<.005	mg/l	1600	08/14/91	EPA Method 206.2	GK

Continued

ANA-LAB CORP.
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2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

192240 Continued

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Barium	.04	mg/l	1910	08/07/91	EPA Method 6010	GK
Beryllium	<.01	mg/l	1910	08/07/91	EPA Method 6010	GK
Dissolved Calcium	160	mg/l	1400	08/05/91	EPA Method 6010	NT
Cadmium	<.001	mg/l	1300	08/16/91	EPA Method 213.2	GK
Cobolt	<.05	mg/l	1910	08/07/91	EPA Method 6010	GK
Chromium	<.02	mg/l	1910	08/07/91	EPA Method 6010	GK
Copper	<.02	mg/l	1910	08/07/91	EPA Method 6010	GK
Dissolved Iron	<.05	mg/l	1400	08/05/91	EPA Method 6010	NT
Mercury	<.001	mg/l	1730	08/01/91	EPA Method 245.3	MET
Dissolved Potassium	<2	mg/l	1400	08/05/91	EPA Method 6010	NT
Dissolved Magnesium	50	mg/l	1400	08/05/91	EPA Method 6010	NT
Dissolved Manganese	<.01	mg/l	1400	08/05/91	EPA Method 6010	NT
Molybdenum	<.05	mg/l	1910	08/07/91	EPA Method 6010	GK
Dissolved Sodium	9.8	mg/l	1400	08/05/91	EPA Method 6010	NT
Nickel	<.05	mg/l	1910	08/07/91	EPA Method 6010	GK
Lead	.002	mg/l	1915	08/15/91	EPA Method 239.2	GK
Antimony	<.1	mg/l	1910	08/07/91	EPA Method 6010	GK
Selenium	<.005	mg/l	2030	08/14/91	EPA Method 270.2	GK
Silicon	8.0	mg/l	1350	08/15/91	EPA Method 6010	GDG
Thallium	<.2	mg/l	1350	08/15/91	EPA Method 6010	GDG
Vanadium	<.05	mg/l	1350	08/15/91	EPA Method 6010	GDG

Continued

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THE COMPLETE SERVICE LAB

2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Zinc	<.01	mg/l	1910	08/07/91	EPA Method 6010	GK
Acrolein	ND(100)	ug/l	1230	08/13/91	EPA Method 8240	PM
Acrylonitrile	ND(100)	ug/l	1230	08/13/91	EPA Method 8240	PM
Benzene	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Bromoform	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Bromomethane	ND(10)	ug/l	1230	08/13/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Chlorobenzene	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Chloroethane	ND(10)	ug/l	1230	08/13/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10)	ug/l	1230	08/13/91	EPA Method 8240	PM
Chloroform	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Chloromethane	ND(10)	ug/l	1230	08/13/91	EPA Method 8240	PM
Dibromochloromethane	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Bromodichloromethane	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Dichlorodiflouromethane	ND(1.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
1,2-Dichloropropane	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM

Continued

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2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Ethyl benzene	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Methylene Chloride	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
1,1,2,2-Tetrachloroethane	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Tetrachloroethene	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Toluene	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
1,1,1-Trichloroethane	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Trichloroethene	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Trichlorofluoromethane	ND(10)	ug/l	1230	08/13/91	EPA Method 8240	PM
Vinyl Chloride	ND(10)	ug/l	1230	08/13/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(5.0)	ug/l	1230	08/13/91	EPA Method 8240	PM
Xylenes	ND(10)	ug/l	1230	08/13/91	EPA Method 8240	PM
Benzene	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB
Ethyl benzene	<0.4	ug/l	0800	08/05/91	EPA Method 8020	KB
Toluene	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB
Xylenes	<0.2	ug/l	0800	08/05/91	EPA Method 8020	KB

Reported detection limits are EPA suggested practical quantitation limits. Actual limit may vary with matrix.

Quality Assurance for the SET with Sample 192240

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
Alkalinity									
	Standard	2420	mg/l as C	2358		103	1900	08/13/91	BW
191618	Duplicate	300	mg/l as C	300		100	1900	08/13/91	BW
191618	Spike		mg/l as C			100	1900	08/13/91	BW
Boron									

ANA-LAB CORP.
THE COMPLETE SERVICE LAB

2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 192240

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	.000	mg/l				1700	08/09/91	MB
	Standard	.51	mg/l	.50		102	1700	08/09/91	MB
191621	Duplicate	<.5	mg/l	<.5		100	1700	08/09/91	MB
				Bromide					
	Standard	100	mg/kg	100		100	1200	08/16/91	ES
192244	Duplicate	55	mg/kg	50		110	1200	08/16/91	ES
				Specific Conductance					
192237	Duplicate	1000	Micromhos	1000		100	0030	08/01/91	SB
192239	Duplicate	800	Micromhos	800		100	0030	08/01/91	SB
192240	Duplicate	810	Micromhos	760		106	0030	08/01/91	SB
				Fluoride					
	Standard	5.0	mg/l	5.0		100	1400	08/06/91	BC
191618	Duplicate	<1	mg/l	<1		100	1400	08/06/91	BC
				Sulfate					
	Standard	92	mg/l	100		108	1230	08/14/91	MB
192324	Duplicate	1300	mg/l	1300		100	1230	08/14/91	MB
192324	Spike		mg/l		100	133	1230	08/14/91	MB
				pH					
	Standard	Calibrate	SU	7.0			0100	08/01/91	SB
	Standard	Calibrate	SU	10.0			0100	08/01/91	SB
	Standard	8.0	SU	8.0		100	0100	08/01/91	SB
192237	Duplicate	7.0	SU	7.0		100	0100	08/01/91	SB
				Chloride					
	Standard	72	mg/l	71		101	1300	08/12/91	HG
192997	Duplicate	16	mg/l	15		106	1300	08/12/91	HG
				Silver					
	Blank	<.01	mg/l				1910	08/07/91	GK
	Standard	.20	mg/l	.20		100	1910	08/07/91	GK
	Standard	1.0	mg/l	1.0		100	1910	08/07/91	GK
192240	Duplicate	<.01	mg/l	<.01		100	1910	08/07/91	GK
192239	Spike		mg/l		1.0	99	1910	08/07/91	GK
				Aluminum					
	Blank	<.03	mg/l				1400	08/06/91	GK
	Standard	1.0	mg/l	1.0		100	1400	08/06/91	GK
	Standard	5.1	mg/l	5.0		102	1400	08/06/91	GK
192240	Duplicate	<.03	mg/l	<.03		100	1400	08/06/91	GK
192239	Spike		mg/l		2.0	94	1400	08/06/91	GK
				Arsenic					
	Blank	<.005	mg/l				1600	08/14/91	GK
	Standard	.099	mg/l	.100		101	1600	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
192240	Spike		mg/l		.100	91	1600	08/14/91	GK
				Barium					

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THE COMPLETE SERVICE LAB

2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 192240

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	<.01	mg/l				1910	08/07/91	GK
	Standard	3.9	mg/l	4.0		103	1910	08/07/91	GK
	Standard	5.2	mg/l	5.0		104	1910	08/07/91	GK
192240	Duplicate	.04	mg/l	.04		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	99	1910	08/07/91	GK
				Beryllium					
	Blank	<.01	mg/l				1910	08/07/91	GK
	Standard	.09	mg/l	.10		111	1910	08/07/91	GK
	Standard	2.0	mg/l	2.0		100	1910	08/07/91	GK
192240	Duplicate	<.01	mg/l	<.01		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	98	1910	08/07/91	GK
				Dissolved Calcium					
	Blank	.16	mg/l				1400	08/05/91	NT
	Standard	10	mg/l	10		100	1400	08/05/91	NT
	Standard	46	mg/l	50		108	1400	08/05/91	NT
192237	Duplicate	200	mg/l	200		100	1400	08/05/91	NT
192240	Spike		mg/l		18	93	1400	08/05/91	NT
				Cadmium					
	Blank	<.001	mg/l				1300	08/16/91	GK
	Standard	.002	mg/l	.002		100	1300	08/16/91	GK
191621	Duplicate	<.001	mg/l	<.001		100	1300	08/16/91	GK
				Cobolt					
	Blank	<.05	mg/l				1910	08/07/91	GK
	Standard	.97	mg/l	1.0		103	1910	08/07/91	GK
	Standard	4.6	mg/l	5.0		108	1910	08/07/91	GK
192240	Duplicate	<.05	mg/l	<.05		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	98	1910	08/07/91	GK
				Chromium					
	Blank	<.02	mg/l				1910	08/07/91	GK
	Standard	.20	mg/l	.20		100	1910	08/07/91	GK
	Standard	4.8	mg/l	5.0		104	1910	08/07/91	GK
192240	Duplicate	<.02	mg/l	<.02		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	85	1910	08/07/91	GK
				Copper					
	Blank	<.02	mg/l				1910	08/07/91	GK
	Standard	.48	mg/l	.50		104	1910	08/07/91	GK
	Standard	4.9	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.02	mg/l	<.02		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	96	1910	08/07/91	GK
				Dissolved Iron					
	Blank	<.05	mg/l				1400	08/05/91	NT
	Standard	2.0	mg/l	2.0		100	1400	08/05/91	NT
	Standard	5.2	mg/l	5.0		104	1400	08/05/91	NT
192237	Duplicate	<.05	mg/l	<.05		100	1400	08/05/91	NT

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2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 192240

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
192240	Spike		ag/l		3.7	106	1400	08/05/91	NT
				Dissolved Potassium					
	Blank	<2	mg/l				1400	08/05/91	NT
	Standard	100	mg/l	100		100	1400	08/05/91	NT
	Standard	49	mg/l	50		102	1400	08/05/91	NT
192237	Duplicate	<2	mg/l	<2		100	1400	08/05/91	NT
192240	Spike		mg/l		18	110	1400	08/05/91	NT
				Dissolved Magnesium					
	Blank	<.01	mg/l				1400	08/05/91	NT
	Standard	99	mg/l	100		101	1400	08/05/91	NT
	Standard	50	mg/l	50		100	1400	08/05/91	NT
192237	Duplicate	69	mg/l	70		101	1400	08/05/91	NT
192240	Spike		mg/l		18	95	1400	08/05/91	NT
				Dissolved Manganese					
	Blank	<.01	mg/l				1400	08/05/91	NT
	Standard	.30	mg/l	.30		100	1400	08/05/91	NT
	Standard	5.2	mg/l	5.0		104	1400	08/05/91	NT
192237	Duplicate	<.01	mg/l	<.01		100	1400	08/05/91	NT
192240	Spike		mg/l		18	106	1400	08/05/91	NT
				Molybdenum					
	Blank	<.05	mg/l				1910	08/07/91	GK
	Standard	5.4	mg/l	5.0		108	1910	08/07/91	GK
192240	Duplicate	<.05	mg/l	<.05		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	99	1910	08/07/91	GK
				Dissolved Sodium					
	Blank	3	mg/l				1400	08/05/91	NT
	Standard	100	mg/l	100		100	1400	08/05/91	NT
	Standard	50	mg/l	50		100	1400	08/05/91	NT
192237	Duplicate	10	mg/l	10		100	1400	08/05/91	NT
192240	Spike		mg/l		18	106	1400	08/05/91	NT
				Nickel					
	Blank	<.05	mg/l				1910	08/07/91	GK
	Standard	.80	mg/l	.80		100	1910	08/07/91	GK
	Standard	4.9	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.05	mg/l	<.05		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	97	1910	08/07/91	GK
				Lead					
	Blank	.002	mg/l				1915	08/15/91	GK
	Blank	<.001	mg/l				1915	08/15/91	GK
	Standard	.028	mg/l	.025		111	1915	08/15/91	GK
	Standard	.027	mg/l	.025		108	1915	08/15/91	GK
	Standard	.048	mg/l	.050		104	1915	08/15/91	GK
	Standard	.051	mg/l	.050		102	1915	08/15/91	GK
191621	Duplicate	.004	mg/l	.005		122	1915	08/15/91	GK

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 192240

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
193075	Duplicate	.002	mg/l	.001		167	1915	08/15/91	GK
191621	Spike		mg/l		.020	100	1915	08/15/91	GK
193075	Spike		mg/l		.020	76	1915	08/15/91	GK
				Antimony					
	Blank	<.1	mg/l				1910	08/07/91	GK
	Standard	1.2	mg/l	1.2		100	1910	08/07/91	GK
	Standard	5.1	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.1	mg/l	<.1		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	96	1910	08/07/91	GK
				Selenium					
	Blank	<.005	mg/l				2030	08/14/91	GK
	Standard	.097	mg/l	.100		103	2030	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
192237	Spike		mg/l		.100	108	2030	08/14/91	GK
				Silicon					
	Blank	.4	mg/l				1350	08/15/91	GDG
	Standard	4.9	mg/l	5.0		102	1350	08/15/91	GDG
	Standard	9.6	mg/l	10		104	1350	08/15/91	GDG
192240	Duplicate	8.1	mg/l	7.8		104	1350	08/15/91	GDG
192239	Spike		mg/l		2.0	95	1350	08/15/91	GDG
				Thallium					
	Blank	<.2	mg/l				1350	08/15/91	GDG
	Standard	.95	mg/l	1.0		105	1350	08/15/91	GDG
	Standard	5.2	mg/l	5.0		104	1350	08/15/91	GDG
192240	Duplicate	<.2	mg/l	<.2		100	1350	08/15/91	GDG
192239	Spike		mg/l		2.0	102	1350	08/15/91	GDG
				Vanadium					
	Blank	<.05	mg/l				1350	08/15/91	GDG
	Standard	1.0	mg/l	1.0		100	1350	08/15/91	GDG
	Standard	5.2	mg/l	5.0		104	1350	08/15/91	GDG
192240	Duplicate	<.05	mg/l	<.05		100	1350	08/15/91	GDG
192239	Spike		mg/l		2.0	102	1350	08/15/91	GDG
				Zinc					
	Blank	<.01	mg/l				1910	08/07/91	GK
	Standard	.41	mg/l	.40		102	1910	08/07/91	GK
	Standard	4.9	mg/l	5.0		102	1910	08/07/91	GK
192240	Duplicate	<.01	mg/l	<.01		100	1910	08/07/91	GK
192239	Spike		mg/l		2.0	101	1910	08/07/91	GK
				Benzene					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	115	0800	08/05/91	KB
				Ethyl benzene					

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Analytical Chemistry • *Utility Operations*

Quality Assurance for the SET with Sample 192240

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.4	ug/l	<0.4		100	0800	08/05/91	KB
192240	Spike				100	72	0800	08/05/91	KB
				Toluene					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	96	0800	08/05/91	KB
				Xylenes					
	Blank	<5.0	ug/l				0800	08/05/91	KB
	Standard	100		100		100	0800	08/05/91	KB
192240	Duplicate	<0.2	ug/l	<0.2		100	0800	08/05/91	KB
192240	Spike				100	70	0800	08/05/91	KB

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab 9107291145 Contract No.

OCD Sample No. ANA-LAB

Collection Date	Collection Time	Collected by—Person/Agency
91 07 29	1145	Johnny Robinson OCD For David Boyer /OCD

SITE INFORMATION

Sample location Rocky Arroyo

Collection Site Description Gas plant, east of plant & upstream of 1st road crossing

Township, Range, Section, Tract:

SEND FINAL REPORT TO ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLING CONDITIONS

☐ Bailed ☐ Pump
☒ Dipped ☐ Tap

pH(00400) 6.5 (Strip)

Water Temp. (00010) 20.5

Water level

Discharge

Sample type Grab

Conductivity (Uncorrected) 170 µmho

Conductivity at 25° C µmho

SAMPLE FIELD TREATMENT— *Check proper boxes*

No. of samples submitted:

☒ **NF:** Whole sample (Non-filtered)
☐ **F:** Filtered in field with 0.45 µ membrane filter
☐ **PF:** Pre-filtered w/45 µ membrane filter

☒ **NA:** No acid added
☐ **A:** HCL
☐ **A:** 2ml H_2SO_4/L added
☒ **A:** 5ml conc. HNO_3 added
☐ **A:** 4ml fuming HNO_3 added

x pHg 5/2 ICE

FIELD COMMENTS:

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☐ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☒ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☒ 005	SUITE	8010-8020	☐ 017	SVOC	625	☒ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☒ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/26/91

JOB NUMBER: 911398 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/22/91
TIME SAMPLED.....: 15:55
WORK DESCRIPTION...: #5

LABORATORY I.D...: 911398-0005
DATE RECEIVED....: 07/24/91
TIME RECEIVED....: 13:15
REMARKS.....:

ARROYO SPRING WATER

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	4.1	0.5	mg/L	325.2 (1)	07/25/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/25/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L. Burden

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Aurora, CO 80012
(303) 751-1780

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/19/91

JOB NUMBER: 911323 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/15/91
TIME SAMPLED.....: 12:50
WORK DESCRIPTION...: #5

LABORATORY I.D...: 911323-0005
DATE RECEIVED....: 07/17/91
TIME RECEIVED....: 13:15
REMARKS.....:

ARROYO SPRING WATER

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	12.1	0.5	mg/L	325.2 (1)	07/18/91	[
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/18/91	I
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burkus

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/12/91

JOB NUMBER: 911259 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/08/91
TIME SAMPLED.....: 11:55
WORK DESCRIPTION...: #5

LABORATORY I.D...: 911259-0005
DATE RECEIVED....: 07/10/91
TIME RECEIVED....: 13:15
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	10.9	0.5	mg/L	325.2 (1)	07/11/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/10/91	MI
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda J. Barbour

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LABORATORY TESTS RESULTS
07/08/91

JOB NUMBER: 911228 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-166 INDIAN BASIN
DATE SAMPLED.....: 07/01/91
TIME SAMPLED.....: 13:40
WORK DESCRIPTION...: #5

LABORATORY I.D...: 911228-0005
DATE RECEIVED....: 07/03/91
TIME RECEIVED....: 16:20
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	10.6	0.5	mg/L	325.2 (1)	07/08/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/04/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 911153 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 06/24/91
TIME SAMPLED.....: 12:30
WORK DESCRIPTION...: 5

LABORATORY I.D...: 911153-0005
DATE RECEIVED....: 06/26/91
TIME RECEIVED....: 14:52
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	11.7	1	mg/L	325.2 (1)	06/28/91	0
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/27/91	P
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Daniel McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 911062 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: IEGP PIPELINE LEAK 32-03-14A
DATE SAMPLED.....: 06/17/91
TIME SAMPLED.....: 10:40
WORK DESCRIPTION...: S

LABORATORY I.D...: 911062-0005
DATE RECEIVED....: 06/19/91
TIME RECEIVED....: 12:55
REMARKS.....:

ARROYO SPRING WATER

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	11.4	0.5	mg/L	325.2 (1)	06/21/91	PJN
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/20/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David McCutchan

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A Gearhart Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
06/17/91

JOB NUMBER: 911022 CUSTOMER: MARATHON OIL COMPANY ATTN: W. HIXON

CLIENT I.D.....: 32.03.164 IBOP PIPELINE LEAK
DATE SAMPLED.....: 06/11/91
TIME SAMPLED.....: 10:30
WORK DESCRIPTION...: #5

LABORATORY I.D...: 911022-0005
DATE RECEIVED....: 06/13/91
TIME RECEIVED....: 16:06
REMARKS.....:

ARROYO SPRING WATER

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	11.3	0.5	mg/L	325.2 (1)	06/14/91
Solids, Total Dissolved (TDS)	1040	10	mg/L	160.1 (1)	06/16/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/14/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Eileen J. Nelson

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 910948 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.166 IBGP PIPELINE LEAK
DATE SAMPLED.....: 06/03/91
TIME SAMPLED.....: 16:35
WORK DESCRIPTION...: #5

LABORATORY I.D...: 910948-0007
DATE RECEIVED....: 06/05/91
TIME RECEIVED....: 16:11
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	11.0	0.5	mg/L	325.3 (1)	06/06/91	D
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/06/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Darrel McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910807 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27-98-810 MINERAL ASSAY
DATE SAMPLED.....: 05/27/91
TIME SAMPLED.....: 14:00
WORK DESCRIPTION...: 05

LABORATORY I.D....: 910807-0005
DATE RECEIVED....: 05/29/91
TIME RECEIVED....: 15:22
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Alkalinity, Total (Unfilt.)	264	5	mg/L CaCO3	310.1 (1)	06/03/91
Bicarbonate (Unfilt.)	322	5	mg/L	403 (3)	06/03/91
Carbonate (Unfilt.)	<1	1	mg/L	403 (3)	06/03/91
Chloride (Unfilt.)	11.1	0.5	mg/L	325.2 (1)	05/30/91
Conductivity (Unfilt.)	1210	1	umhos/cm @25dF	120.1 (1)	05/30/91
Hardness, Total (Unfilt.)	781	1	mg/L(as CaCO3)	314A (3)	06/20/91
Nitrogen, Nitrate (Unfilt.)	<0.1	0.1	mg/L (as N)	353.2 (1)	06/13/91
pH (Unfilt.)	7.29	0.01	pH Units	150.1 (1)	06/03/91
Solids, Total Dissolved (TDS)	1050	10	mg/L	160.1 (1)	06/13/91
Sulfate (Unfilt.)	492	10	mg/L	375.3 (1)	06/19/91
Calcium, Total (Ca)	199	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Iron, Total (Fe)	<0.03	0.03	mg/L	200.7/6010 (1,2)	06/11/91
Magnesium, Total (Mg)	68.9	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Manganese, Total (Mn)	<0.01	0.01	mg/L	200.7/6010 (1,2)	06/11/91
Potassium, Total (K)	1.59	0.01	mg/L	258.1 (1)	06/20/91
Sodium, Total (Na)	13	1	mg/L	200.7/6010 (1,2)	06/11/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/29/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Daniel McWhorter

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PAGE:5

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ANALYTICAL REPORT
06/21/91

CUSTOMER: Marathon Oil Company File No.: 91088

CATION/ANION BALANCE

Client Sample I.D..... #5
Remark/Project..... 27-98-810 Mineral Assay
Date/Time Sampled..... 05-27-91/1400
Date/Time Received..... 05-29-91/1522
Laboratory Sample I.D..... 910887-5

PARAMETER	RESULT		UNITS
pH	7.29		pH Units
Conductivity at 25 degrees C	1210		umhos/cm
Alkalinity (as CaCO3)	264		mg/L
Total Diss. Solids (measured)	1050		mg/L
Total Diss. Solids (calculated)	947		mg/L
		meq/Liter	
Calcium (Ca)	199	9.93	mg/L
Magnesium (Mg)	68.9	5.67	mg/L
Sodium (Na)	13	0.57	mg/L
Potassium (K)	1.59	0.04	mg/L
Total Cations meq/Liter		16.21	
		meq/Liter	
Bicarbonate (HCO3)	322	5.28	mg/L
Carbonate (CO3)	ND(1)	0.00	mg/L
Hydroxide (OH)	ND(1)	0.00	mg/L
Chloride (Cl)	11.1	0.31	mg/L
Sulfate (SO4)	492	10.24	mg/L
Total Anions meq/Liter		15.83	

Cation-Anion Balance (RPD) 2.32 Percent

ND = NOT DETECTED AT LEVEL SHOWN IN PARENTHESIS

Approved By: D. David McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910852 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27 90 010
DATE SAMPLED.....: 05/20/91
TIME SAMPLED.....: 15:03
WORK DESCRIPTION...: S

LABORATORY I.D...: 910852-0005
DATE RECEIVED....: 05/22/91
TIME RECEIVED....: 16:30
REMARKS.....: SAMPLE TIME DIFFERS FROM CO

ARROYO SPRING WATER

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	11.2	0.5	mg/L	325.2 (1)	05/24/91	D
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/23/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
05/16/91

JOB NUMBER: 910812 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: 2798810
DATE SAMPLED.....: 05/12/91
TIME SAMPLED.....: 09:00
WORK DESCRIPTION...: 05

LABORATORY I.D...: 910812-0005
DATE RECEIVED....: 05/14/91
TIME RECEIVED....: 16:00
REMARKS.....:

Spring Water in Arroyo

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	11.8	0.5	mg/L	325.2 (1)	05/15/91	DTJ
AROMATIC VOLATILE ORGANICS		*1		8240 (2)	05/15/91	MLD
Benzene	ND	5	ug/L			
Toluene	ND	5	ug/L			
Ethyl Benzene	ND	5	ug/L			
Xylenes	ND	5	ug/L			

APPROVED BY: David McWhorter

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FROM MOBIL PRU 05/21/91 12:50 P.02

West Indian Hills Spring East

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CORE LABORATORIES

LABORATORY TESTS RESULTS
10/01/91

JOB NUMBER: 911797 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 09/24/91
TIME SAMPLED.....: 09:11
WORK DESCRIPTION...: 6

LABORATORY I.D...: 911797-0006
DATE RECEIVED....: 09/26/91
TIME RECEIVED....: 15:40
REMARKS.....:

Upper Hills Spring - East

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	7.8	0.5	MG/L	325.2 (1)	09/27/91
8020 - AROMATIC VOLATILE ORGANICS		#1		8020 (2)	10/01/91
Benzene	ND	1	UG/L		
Toluene	ND	1	UG/L		
Ethyl Benzene	ND	1	UG/L		
Xylenes	ND	1	UG/L		

APPROVED BY: Linda L. Benbow

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LABORATORY TESTS RESULTS
09/13/91

JOB NUMBER: 911689 CUSTOMER: MARATHON OIL COMPANY ATTN: DAVID LOUCH

CLIENT I.D.....: 32-03-144 IBGP PIPELINE
DATE SAMPLED.....: 09/09/91
TIME SAMPLED.....: 14:28
WORK DESCRIPTION...: 6

LABORATORY I.D...: 911689-0006
DATE RECEIVED....: 09/11/91
TIME RECEIVED....: 15:25
REMARKS.....:

EAST— UPPER INDIAN HILLS SPRING

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	8.9	0.5	mg/L	325.2 (1)	09/12/91	I
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/12/91	MI
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Naffziger

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LABORATORY TESTS RESULTS
08/30/91

JOB NUMBER: 911616 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/26/91
TIME SAMPLED.....: 13:20
WORK DESCRIPTION...: 6

LABORATORY I.D...: 911616-0006
DATE RECEIVED....: 08/28/91
TIME RECEIVED....: 15:26
REMARKS.....:

UPPER INDIAN HILLS SPRING - EAST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TI
Chloride (Unfilt.)	7.7	0.5	mg/L	325.2 (1)	08/29/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/29/91	
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Maggs

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/23/91

JOB NUMBER: 911575 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/19/91
TIME SAMPLED.....: 11:42
WORK DESCRIPTION...: 6

LABORATORY I.D...: 911575-0006
DATE RECEIVED....: 08/21/91
TIME RECEIVED....: 16:06
REMARKS.....:

UPPER INDIAN HILLS SPRING - EAST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	5.0	0.5	mg/L	325.2 (1)	08/21/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/22/91	MI
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Mayfield

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LABORATORY TESTS RESULTS
08/16/91

JOB NUMBER: 911529 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/12/91
TIME SAMPLED.....: 13:45
WORK DESCRIPTION...: 6

LABORATORY I.D...: 911529-0006
DATE RECEIVED....: 08/14/91
TIME RECEIVED....: 13:25
REMARKS.....:

UPPER INDIAN HILLS SPRING - EAST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	10.1	0.5	mg/L	325.2 (1)	08/15/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/15/91	PCM
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda T. Burkhead

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/08/91

JOB NUMBER: 911476 CUSTOMER: MARATHON OIL COMPANY ATTN: G. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/04/91
TIME SAMPLED.....: 10:05
WORK DESCRIPTION...: 6

LABORATORY I.D...: 911476-0005
DATE RECEIVED....: 08/06/91
TIME RECEIVED....: 13:55
REMARKS.....:

UPPER INDIAN HILLS SPRING - EAST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	9.4	0.5	mg/L	325.2 (1)	08/08/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/07/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Edward J. Nagyvary

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LABORATORY TESTS RESULTS
08/02/91

JOB NUMBER: 911436 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-166 INDIAN BASIN
DATE SAMPLED.....: 07/29/91
TIME SAMPLED.....: 11:16
WORK DESCRIPTION...: 6

LABORATORY I.D...: 911436-0006
DATE RECEIVED....: 07/31/91
TIME RECEIVED....: 15:19
REMARKS.....:

UPPER INDIAN HILLS SPRING EAST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	8.6	0.5	mg/L	325.2 (1)	08/01/91	C
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/02/91	H
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

W.Z. Bunkers

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LABORATORY TESTS RESULTS
07/26/91

JOB NUMBER: 911398 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/22/91
TIME SAMPLED.....: 15:22
WORK DESCRIPTION...: #6

LABORATORY I.D...: 911398-0006
DATE RECEIVED....: 07/24/91
TIME RECEIVED....: 13:15
REMARKS.....:

UPPER INDIAN HILLS SPRING EAST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TEC
Chloride (Unfilt.)	3.8	0.5	mg/L	325.2 (1)	07/25/91	M
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/25/91	MR
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda A. Barbee

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/19/91

JOB NUMBER: 911323 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/15/91
TIME SAMPLED.....: 12:15
WORK DESCRIPTION...: #6

LABORATORY I.D...: 911323-0006
DATE RECEIVED....: 07/17/91
TIME RECEIVED....: 13:15
REMARKS.....:

UPPER INDIAN HILLS SPRING - EAST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	11.8	0.5	mg/L	325.2 (1)	07/18/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/18/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burbus

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/12/91

JOB NUMBER: 911259 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/08/91
TIME SAMPLED.....: 11:17
WORK DESCRIPTION...: #6

LABORATORY I.D...: 911259-0006
DATE RECEIVED....: 07/10/91
TIME RECEIVED....: 13:15
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	11.0	0.5	mg/L	325.2 (1)	07/11/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/10/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burkes

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/08/91

JOB NUMBER: 911228 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/01/91
TIME SAMPLED.....: 12:58
WORK DESCRIPTION...: #6

LABORATORY I.D...: 911228-0006
DATE RECEIVED....: 07/03/91
TIME RECEIVED....: 16:20
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	10.3	0.5	mg/L	325.2 (1)	07/08/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/04/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWilliams

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 911153 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-166 INDIAN BASIN
DATE SAMPLED.....: 06/24/91
TIME SAMPLED.....: 11:05
WORK DESCRIPTION...: 6

LABORATORY I.D...: 911153-0006
DATE RECEIVED....: 06/26/91
TIME RECEIVED....: 14:52
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	11.3	1	mg/L	325.2 (1)	06/28/91	0
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/27/91	p
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Daniel McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 911062 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: ISGP PIPELINE LEAK 32-03-144
DATE SAMPLED.....: 06/17/91
TIME SAMPLED.....: 09:55
WORK DESCRIPTION...: 6

LABORATORY I.D...: 911062-0006
DATE RECEIVED....: 06/19/91
TIME RECEIVED....: 12:55
REMARKS.....:

UPPER INDIAN HILLS SPRING - EAST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	11.1	0.5	mg/L	325.2 (1)	06/21/91	PJH
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/20/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/17/91

JOB NUMBER: 911022 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.14A IGAP PIPELINE LEAK
DATE SAMPLED.....: 06/11/91
TIME SAMPLED.....: 09:18
WORK DESCRIPTION...: #8

LABORATORY I.D...: 911022-0006
DATE RECEIVED....: 06/13/91
TIME RECEIVED....: 16:06
REMARKS.....:

UPPER INDIAN HILLS SPRING - EAST

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	11.3	0.9	mg/L	325.2 (1)	06/14/91
Solids, Total Dissolved (TDS)	977	10	mg/L	160.1 (1)	06/14/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/14/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen J. Nixon

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1700

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 910948 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.144 IBOP PIPELINE LEAK
DATE SAMPLED.....: 06/03/91
TIME SAMPLED.....: 13:55
WORK DESCRIPTION...: #6

LABORATORY I.D...: 910948-0008
DATE RECEIVED....: 06/05/91
TIME RECEIVED....: 16:11
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	17.1	0.5	mg/L	325.2 (1)	06/06/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/06/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David O McWhorter

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Litton/Gearhart Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910887 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27-98-810 MINERAL ASSAY
DATE SAMPLED.....: 05/27/91
TIME SAMPLED.....: 15:20
WORK DESCRIPTION...: #6

LABORATORY I.D...: 910887-0006
DATE RECEIVED....: 05/29/91
TIME RECEIVED....: 15:22
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Alkalinity, Total (Unfilt.)	251	5	mg/L CaCO3	310.1 (1)	06/03/91
Bicarbonate (Unfilt.)	306	5	mg/L	403 (3)	06/03/91
Carbonate (Unfilt.)	<1	1	mg/L	403 (3)	06/03/91
Chloride (Unfilt.)	11.1	0.5	mg/L	325.2 (1)	05/30/91
Conductivity (Unfilt.)	1190	1	umhos/cm @25dF	120.1 (1)	05/30/91
Hardness, Total (Unfilt.)	745	1	mg/L(as CaCO3)	314A (3)	06/20/91
Nitrogen, Nitrate (Unfilt.)	<0.1	0.1	mg/L (as N)	353.2 (1)	06/13/91
pH (Unfilt.)	7.92	0.01	pH Units	150.1 (1)	06/08/91
Solids, Total Dissolved (TDS)	991	10	mg/L	160.1 (1)	06/17/91
Sulfate (Unfilt.)	463	10	mg/L	375.3 (1)	06/19/91
Calcium, Total (Ca)	190	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Iron, Total (Fe)	0.07	0.03	mg/L	200.7/6010 (1,2)	06/11/91
Magnesium, Total (Mg)	69.7	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Manganese, Total (Mn)	<0.01	0.01	mg/L	200.7/6010 (1,2)	06/11/91
Potassium, Total (K)	1.70	0.01	mg/L	258.1 (1)	06/20/91
Sodium, Total (Na)	13	1	mg/L	200.7/6010 (1,2)	06/11/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/29/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David L. McWhorter

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

PAGE:6

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

ANALYTICAL REPORT
06/21/91

CUSTOMER: Marathon Oil Company File No.: 91088

CATION/ANION BALANCE

Client Sample I.D..... #6
Remark/Project..... 27-98-810 Mineral Assay
Date/Time Sampled..... 05-27-91/1520
Date/Time Received..... 05-29-91/1522
Laboratory Sample I.D..... 910887-6

PARAMETER	RESULT		UNITS
pH	7.52		pH Units
Conductivity at 25 degrees C	1190		umhos/cm
Alkalinity (as CaCO3)	251		mg/L
Total Diss. Solids (measured)	991		mg/L
Total Diss. Solids (calculated)	898		mg/L
		meq/Liter	
Calcium (Ca)	190	9.48	mg/L
Magnesium (Mg)	65.7	5.41	mg/L
Sodium (Na)	13	0.57	mg/L
Potassium (K)	1.70	0.04	mg/L
Total Cations meq/Liter		15.50	
		meq/Liter	
Bicarbonate (HCO3)	306	5.02	mg/L
Carbonate (CO3)	ND(1)	0.00	mg/L
Hydroxide (OH)	ND(1)	0.00	mg/L
Chloride (Cl)	11.1	0.31	mg/L
Sulfate (SO4)	463	9.64	mg/L
Total Anions meq/Liter		14.97	

Cation-Anion Balance (RPD) 3.47 Percent

ND = NOT DETECTED AT LEVEL SHOWN IN PARENTHESIS

Approved By: David McWhorter

1300 South Potomac, St., Suite 130
Aurora, Colorado 80012
Tele. (303) 751-1780

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910852 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIKON

CLIENT I.D.....: 27 98 810
DATE SAMPLED.....: 05/20/91
TIME SAMPLED.....: 16:52
WORK DESCRIPTION...: 6

LABORATORY I.D...: 910852-0006
DATE RECEIVED....: 05/22/91
TIME RECEIVED....: 16:30
REMARKS.....: SAMPLE TIME DIFFERS FROM C

UPPER FOX HILLS SPRING - EAST

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE T
Chloride (Unfilt.)	11.3	0.8	mg/L	325.2 (1)	05/24/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/23/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David MacWhorter

1300 S. Potomac St., Suite 190
Aurora, CO 80012
(303) 751-1780

Lee Correspondence

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

October 3, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained on September 24, 1991 from your well located next to the paved road approximately 0.5 miles west of Marathon's Indian Basin Gas Plant have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 736

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

September 19, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained on September 9, 1991 from your well located next to the paved road approximately 0.5 miles west of Marathon's Indian Basin Gas Plant have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 733

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

September 10, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained on August 26, 1991 from your well located next to the paved road approximately 0.5 miles west of Marathon's Indian Basin Gas Plant have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 729

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 28, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained on August 19, 1991 from your well located next to the paved road approximately 0.5 miles west of Marathon's Indian Basin Gas Plant have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 723

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 20, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained on August 12, 1991 from your well located next to the paved road approximately 0.5 miles west of Marathon's Indian Basin Gas Plant have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 720

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 13, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained on August 4, 1991 from your well located next to the paved road approximately 0.5 miles west of Marathon's Indian Basin Gas Plant have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 715

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 5, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained on July 29, 1991 from your well located next to the paved road approximately 0.5 miles west of Marathon's Indian Basin Gas Plant have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 710

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 29, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained on July 15, 1991 and July 23, 1991 from your well located next to the paved road approximately 0.5 miles west of Marathon's Indian Basin Gas Plant have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 704

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 15, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained from your well on July 8, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 698

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 10, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained from your well on June 29, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 694

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

July 2, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained from your well on June 3, 1991 and June 24, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8532.

Sincerely,

Thomas F. Zapatka
Advanced Environmental and Safety Engineer

TFZ/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 691

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

June 27, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained May 20, 1991 and May 27, 1991 from your well located next to the paved road approximately 0.5 miles west of Marathon's Indian Basin Gas Plant have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present. You may note the attached reports contain results for numerous other parameters. The Environmental Bureau of the New Mexico Oil Conservation Division requested that this one-time analyses be conducted to appropriately characterize your water. The results indicate that your water is typical, as compared to other waters in this area.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A J Kavran

A. J. Kavran
Environmental and Safety Supervisor

AJK/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 687

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

June 26, 1991

Mr. & Mrs. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Lee:

Final analytical results from the water samples obtained on June 11, 1991 and June 17, 1991 from your well located next to the paved road approximately 0.5 miles west of Marathon's Indian Basin Gas Plant have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for these parameters as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elg

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
D. L. Manus (BLM-Carlsbad)
J. L. Benson
A. R. Kukla
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 683

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

May 14, 1991

Mr. Lee
P. O. Box 89
Lakewood, New Mexico 88254

Re: Freshwater Analysis

Dear Mr. Lee:

As discussed by telephone, no hydrocarbons or abnormally high chloride concentrations were found to exist within the freshwater sample obtained from your water well on April 24. The results of this analysis are attached.

For your information, the leak that occurred in the Indian Basin Field resulted in condensate and produced water being released. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analysis of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analysis utilizing a procedure specifically approved for drinking water, as specified by the EPA. The tests were designed to evaluate potential contamination of your water from the released fluids described above. The results of these tests indicate your water to be well within standards established by the EPA for drinking water.

We will test your water weekly over the near term and continue to report results by telephone, as well as by written correspondence including copies of laboratory analysis. In the meantime, should you have any questions, feel free to call me collect at (915) 687-8542.

Very truly yours,

T. N. Tipton
Operations Superintendent

TNT;nrt/09191

cc: J. L. Benson
A. J. Kavran
R. F. Unger
D. L. Mannus (BLM-Carlsbad)
D. G. Boyer (NMOCD-Santa Fe)

Lee Water Well

"CONFIDENTIAL BUSINESS INFORMATION"

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CORE LABORATORIES

LABORATORY TESTS RESULTS
10/01/91

JOB NUMBER: 911797 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 09/24/91
TIME SAMPLED.....: 08:15
WORK DESCRIPTION...: 9

Lee Water Well

LABORATORY I.D....: 911797-0008
DATE RECEIVED....: 09/26/91
TIME RECEIVED....: 15:40
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	7.7	0.5	mg/L	325.2 (1)	09/27/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/30/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda A. Barbee

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CORE LABORATORIES

LABORATORY TESTS RESULTS
09/13/91

JOB NUMBER: 911689 CUSTOMER: MARATHON OIL COMPANY ATTN: DAVID LOUCH

CLIENT I.D.....: 32-03-144 IBGP PIPELINE
DATE SAMPLED.....: 09/09/91
TIME SAMPLED.....: 10:15
WORK DESCRIPTION...: 9

LABORATORY I.D...: 911689-0009
DATE RECEIVED....: 09/11/91
TIME RECEIVED....: 15:25
REMARKS.....:

Lee Water Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	16.6	0.5	mg/L	325.2 (1)	09/12/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/13/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Naylor

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/30/91

JOB NUMBER: 911616 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/26/91
TIME SAMPLED.....: 15:32
WORK DESCRIPTION...: 9

LABORATORY I.D...: 911616-0009
DATE RECEIVED....: 08/28/91
TIME RECEIVED....: 15:26
REMARKS.....: YELLOW PARTICLES IN SAMPLE

LEE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	16.3	0.5	mg/L	325.2 (1)	08/29/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/30/91	
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Noggle

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/23/91

JOB NUMBER: 911575 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/19/91
TIME SAMPLED.....: 14:25
WORK DESCRIPTION...: 9

LABORATORY I.D...: 911575-0009
DATE RECEIVED....: 08/21/91
TIME RECEIVED....: 16:06
REMARKS.....:

LEE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	11.8	0.5	mg/L	325.2 (1)	08/21/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/22/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Mayger

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/16/91

JOB NUMBER: 911529 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/12/91
TIME SAMPLED.....: 15:43
WORK DESCRIPTION...: 9

LABORATORY I.D...: 911529-0009
DATE RECEIVED....: 08/14/91
TIME RECEIVED....: 13:25
REMARKS.....:

LEE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECH
Chloride (Unfilt.)	16.2	0.5	mg/L	325.2 (1)	08/15/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/15/91	PCM
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Berkus

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/08/91

JOB NUMBER: 911476 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-14S INDIAN BASIN
DATE SAMPLED.....: 08/06/91
TIME SAMPLED.....: 12:01
WORK DESCRIPTION...: 9

LABORATORY I.D...: 911476-0007
DATE RECEIVED....: 08/06/91
TIME RECEIVED....: 13:55
REMARKS.....:

LEE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	15.7	0.5	mg/L	325.2 (1)	08/08/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/07/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Eileen G. Noggle

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/02/91

JOB NUMBER: 911436 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/29/91
TIME SAMPLED.....: 15:05
WORK DESCRIPTION...: 9

LABORATORY I.D...: 911436-0009
DATE RECEIVED....: 07/31/91
TIME RECEIVED....: 15:15
REMARKS.....:

LEE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	15.9	0.5	mg/L	325.2 (1)	08/01/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/02/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L. Barbee

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/26/91

JOB NUMBER: 911398 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-14A INDIAN BASIN
DATE SAMPLED.....: 07/23/91
TIME SAMPLED.....: 11:20
WORK DESCRIPTION...: #9

LEE WATER WELL

LABORATORY I.D...: 911398-0009
DATE RECEIVED....: 07/24/91
TIME RECEIVED....: 13:15
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TEC
Chloride (Unfilt.)	11.8	0.5	mg/L	325.2 (1)	07/25/91	MK
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/25/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burden

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/19/91

JOB NUMBER: 911323 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/15/91
TIME SAMPLED.....: 15:48
WORK DESCRIPTION...: #9

LABORATORY I.D...: 911323-0009
DATE RECEIVED....: 07/17/91
TIME RECEIVED....: 13:15
REMARKS.....:

LEE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	8.0	0.5	mg/L	325.2 (1)	07/18/91	DTJ
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/18/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Berbers

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/12/91

JOB NUMBER: 911259 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 07/08/91
TIME SAMPLED.....: 14:32
WORK DESCRIPTION...: #9

LABORATORY I.D...: 911259-0009
DATE RECEIVED....: 07/10/91
TIME RECEIVED....: 13:15
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	15.2	0.5	mg/L	325.2 (1)	07/11/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/11/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Linda L. Burkens

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CORE LABORATORIES

LABORATORY TESTS RESULTS
07/08/91

JOB NUMBER: 911228 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-146 INDIAN BASIN
DATE SAMPLED.....: 06/29/91
TIME SAMPLED.....: 12:20
WORK DESCRIPTION...: #9

LABORATORY I.D...: 911228-0009
DATE RECEIVED....: 07/03/91
TIME RECEIVED....: 16:20
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	6.7	0.5	mg/L	325.2 (1)	07/08/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	07/04/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 911153 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 06/24/91
TIME SAMPLED.....: 14:42
WORK DESCRIPTION...: 9

LABORATORY I.D...: 911153-0009
DATE RECEIVED....: 06/26/91
TIME RECEIVED....: 14:58
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	11.3	1	mg/L	325.2 (1)	06/28/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/27/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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CONFIDENTIAL **CORE LABORATORIES**

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 911062 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: IBGP PIPELINE LEAK 32-03-164
DATE SAMPLED.....: 06/17/91
TIME SAMPLED.....: 14:03
WORK DESCRIPTION...: 9

LABORATORY I.D...: 911062-0009
DATE RECEIVED....: 06/19/91
TIME RECEIVED....: 12:55
REMARKS.....:

LEE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Chloride (Unfilt.)	12.3	0.5	mg/L	325.2 (1)	06/21/91	PJM
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/20/91	MRC
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Daniel McCollister

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/17/91

JOB NUMBER: 911022 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: 32.05.164 IBCP PIPELINE LEAK
DATE SAMPLED.....: 06/11/91
TIME SAMPLED.....: 12:18
WORK DESCRIPTION...: #9

LABORATORY I.D...: 911022-0009
DATE RECEIVED....: 06/13/91
TIME RECEIVED....: 16:06
REMARKS.....:

LEE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (unfilt.)	7.5	0.5	mg/L	325.2 (1)	06/14/91
Solids, Total Dissolved (TDS)	451	10	mg/L	160.1 (1)	06/14/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/14/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen J. Noyes

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PAGE:9

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/28/91

JOB NUMBER: 910948 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32.03.144 IBDP PIPELINE LEAK
DATE SAMPLED.....: 06/03/91
TIME SAMPLED.....: 13:05
WORK DESCRIPTION...: 09

LABORATORY I.D...: 910948-0011
DATE RECEIVED....: 06/05/91
TIME RECEIVED....: 16:11
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	10.7	0.5	mg/L	325.2 (1)	06/06/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	06/06/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910887 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27-98-810 MINERAL ASSAY
DATE SAMPLED.....: 05/27/91
TIME SAMPLED.....: 12:40
WORK DESCRIPTION...: #9

LABORATORY I.D...: 910887-0008
DATE RECEIVED....: 05/29/91
TIME RECEIVED....: 15:22
REMARKS.....:

Lee Water Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Alkalinity, Total (Unfilt.)	254	5	mg/L CaCO3	310.1 (1)	06/03/91	K
Bicarbonate (Unfilt.)	310	5	mg/L	403 (3)	06/03/91	K
Carbonate (Unfilt.)	<1	1	mg/L	403 (3)	06/03/91	K
Chloride (Unfilt.)	14.1	0.5	mg/L	325.2 (1)	05/30/91	K
Conductivity (Unfilt.)	623	1	umhos/cm @25dF	120.1 (1)	05/30/91	
Hardness, Total (Unfilt.)	316	1	mg/L(as CaCO3)	314A (3)	06/20/91	T
Nitrogen, Nitrate (Unfilt.)	5.0	0.1	mg/L (as N)	353.2 (1)	06/13/91	F
pH (Unfilt.)	7.54	0.01	pH Units	150.1 (1)	06/03/91	K
Solids, Total Dissolved (TDS)	413	10	mg/L	160.1 (1)	06/17/91	K
Sulfate (Unfilt.)	60	10	mg/L	375.3 (1)	06/19/91	R
Calcium, Total (Ca)	71.6	0.5	mg/L	200.7/6010 (1,2)	06/11/91	T
Iron, Total (Fe)	<0.03	0.03	mg/L	200.7/6010 (1,2)	06/11/91	T
Magnesium, Total (Mg)	33.3	0.1	mg/L	200.7/6010 (1,2)	06/11/91	T
Manganese, Total (Mn)	<0.01	0.01	mg/L	200.7/6010 (1,2)	06/11/91	T
Potassium, Total (K)	1.70	0.01	mg/L	258.1 (1)	06/20/91	T
Sodium, Total (Na)	17	1	mg/L	200.7/6010 (1,2)	06/11/91	T
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/29/91	P
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: David McWhorter

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CORE LABORATORIES

ANALYTICAL REPORT
06/21/91

CUSTOMER: Marathon Oil Company

File No..: 910887

CATION/ANION BALANCE

Client Sample I.D..... #8
Remark/Project..... 27-98-810 Mineral Assay
Date/Time Sampled..... 05-27-91/1240
Date/Time Received..... 05-29-91/1522
Laboratory Sample I.D..... 910887-8

Lee Water Well

PARAMETER	RESULT		UNITS
pH	7.54		pH Units
Conductivity at 25 degrees C	623		umhos/cm
Alkalinity (as CaCO3)	254		mg/L
Total Diss. Solids (measured)	413		mg/L
Total Diss. Solids (calculated)	353		mg/L
		meg/Liter	
Calcium (Ca)	71.6	3.57	mg/L
Magnesium (Mg)	33.3	2.74	mg/L
Sodium (Na)	17	0.74	mg/L
Potassium (K)	1.70	0.04	mg/L
Total Cations meq/Liter		7.10	
		meg/Liter	
Bicarbonate (HCO3)	310	5.08	mg/L
Carbonate (CO3)	ND(1)	0.00	mg/L
Hydroxide (OH)	ND(1)	0.00	mg/L
Chloride (Cl)	14.1	0.40	mg/L
Sulfate (SO4)	60	1.25	mg/L
Total Anions meq/Liter		6.73	
Cation-Anion Balance (RPD)	5.33 Percent		

ND = NOT DETECTED AT LEVEL SHOWN IN PARENTHESIS

Approved By: David McWhorter

1300 South Potomac, St., Suite 130
Aurora, Colorado 80012
Tele. (303) 751-1780

"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
06/21/91

JOB NUMBER: 910852 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27 98 810 MINERAL ASSAY
DATE SAMPLED.....: 05/20/91
TIME SAMPLED.....: 18:50
WORK DESCRIPTION...: 9

LABORATORY I.D...: 910852-0009
DATE RECEIVED....: 05/22/91
TIME RECEIVED....: 16:30
REMARKS.....:

LEE WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Alkalinity, Total (Unfilt.)	239	5	mg/L CaCO3	310.1 (1)	05/28/91
Bicarbonate (Unfilt.)	292	5	mg/L	403 (3)	05/28/91
Carbonate (Unfilt.)	<1	1	mg/L	403 (3)	05/28/91
Chloride (Unfilt.)	7.9	0.5	mg/L	325.2 (1)	05/24/91
Conductivity (Unfilt.)	655	1	umhos/cm @25dF	120.1 (1)	05/24/91
Hardness, Total (Unfilt.)	348	1	mg/L(as CaCO3)	314A (3)	06/20/91
Nitrogen, Nitrate (Unfilt.)	4.8	0.1	mg/L (as N)	353.2 (1)	06/11/91
pH (Unfilt.)	7.71	0.01	pH Units	150.1 (1)	05/28/91
Solids, Total Dissolved (TDS)	403	10	mg/L	160.1 (1)	05/28/91
Sulfate (Unfilt.)	115	10	mg/L	375.2 (1)	06/12/91
Calcium, Total (Ca)	85.7	0.5	mg/L	200.7/6010 (1,2)	06/11/91
Iron, Total (Fe)	<0.03	0.03	mg/L	200.7/6010 (1,2)	06/11/91
Magnesium, Total (Mg)	32.6	0.1	mg/L	200.7/6010 (1,2)	06/11/91
Manganese, Total (Mn)	<0.01	0.01	mg/L	200.7/6010 (1,2)	06/11/91
Potassium, Total (K)	1.51	0.01	mg/L	258.1 (1)	06/20/91
Sodium, Total (Na)	11	1	mg/L	200.7/6010 (1,2)	06/11/91
AROMATIC VOLATILE ORGANICS		*1		8020 (2)	05/23/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: David McWhorter

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CORE LABORATORIES

ANALYTICAL REPORT
06/21/91

CUSTOMER: Marathon Oil Company File No.: 9108852

CATION/ANION BALANCE

Client Sample I.D..... #3
Remark/Project..... 27-98-810 Mineral Assay
Date/Time Sampled..... 05-20-91/1850
Date/Time Received..... 05-22-91/1630
Laboratory Sample I.D..... 910852-9
LEE WATER WELL

PARAMETER	RESULT		UNITS
pH	7.71		pH Units
Conductivity at 25 degrees C	655		Umhos/cm
Alkalinity (as CaCO3)	239		mg/L
Total Diss. Solids (measured)	403		mg/L
Total Diss. Solids (calculated)	400		mg/L
		meq/Liter	
Calcium (Ca)	85.7	4.28	mg/L
Magnesium (Mg)	32.6	2.68	mg/L
Sodium (Na)	11	0.48	mg/L
Potassium (K)	1.51	0.04	mg/L
Total Cations meq/Liter		7.48	
		meq/Liter	
Bicarbonate (HCO3)	292	4.79	mg/L
Carbonate (CO3)	ND(1)	0.00	mg/L
Hydroxide (OH)	ND(1)	0.00	mg/L
Chloride (Cl)	7.9	0.22	mg/L
Sulfate (SO4)	115	7.39	mg/L
Total Anions meq/Liter		7.40	
Cation-Anion Balance (RPD)	0.98 Percent		

ND = NOT DETECTED AT LEVEL SHOWN IN PARENTHESIS

Approved By: David McWhorter

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CORE LABORATORIES

LABORATORY TESTS RESULTS
05/07/91

JOB NUMBER: 910711 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 27 98 810
DATE SAMPLED.....: 04/24/91
TIME SAMPLED.....: 14:00
WORK DESCRIPTION...: STOCK TANK WATER SUPPLY

LABORATORY I.D...: 910711-0002
DATE RECEIVED....: 04/25/91
TIME RECEIVED....: 15:02
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE T
Chloride (Unfilt.)	9.7	0.5	mg/L	325.2 (1)	04/26/91
AROMATIC VOLATILE ORGANICS		*1		8240 (2)	04/30/91
Benzene	ND	5	ug/L		
Toluene	ND	5	ug/L		
Ethyl Benzene	ND	5	ug/L		
Xylenes	ND	5	ug/L		

APPROVED BY: Ellen J. Naffziger

1300 S. Potomac St., Suite 130
Aurora, CO 80012
(303) 751-1780

Howell Correspondence

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

October 3, 1991

Mr. & Mrs. Howell
P. O. Box 94
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Howell:

Final analytical results from the water samples obtained from your domestic and stock wells on September 23, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 735

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

September 19, 1991

Mr. & Mrs. Howell
P. O. Box 94
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Howell:

Final analytical results from the water samples obtained from your domestic and stock wells on September 9, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 734

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

August 28, 1991

Mr. & Mrs. Howell
P. O. Box 94
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Howell:

Final analytical results from the water samples obtained from your domestic and stock wells on August 19, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 727

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, Texas 79702
Telephone 915/682-1626

September 10, 1991

Mr. & Mrs. Howell
P. O. Box 94
Lakewood, New Mexico 88254

Re: Water Well Analysis

Dear Mr. & Mrs. Howell:

Final analytical results from the water samples obtained from your domestic and stock wells on August 26, 1991 have been received and are attached. No hydrocarbons or abnormally high chloride concentrations were found to be present.

As you know, the leak that occurred in the Indian Basin Field resulted in the release of condensate and produced water. The condensate is a light, clear oil, while the produced water is a brine which is more saline than water from your water well.

Analyses of your water was conducted at Core Laboratories in Aurora, Colorado. This lab, which is certified by the Environmental Protection Agency (EPA), conducted the analyses utilizing procedures approved by the EPA. The analyses were utilized to evaluate potential contamination of your water from the released fluids described above. The results of these analyses indicate your water to be within standards for hydrocarbons and chlorides as established by EPA for drinking water.

Plans are to continue to conduct routine sampling of your water over the near term. You will continue to be provided with the analytical results as they become available. In the meantime, should you have any questions, feel free to contact me collect through Marathon's Midland office, (915) 687-8528.

Sincerely,

A J Kavran

A. J. Kavran
Environmental and Safety Supervisor

AJK/elk

Attachments

cc: D. G. Boyer (NMOCD-Santa Fe)
A. Collar (BLM-Roswell)
J. L. Benson
R. F. Unger

CERTIFIED MAIL RETURN RECEIPT REQUESTED - P 546 958 730

Howell water well

Western Atlas International
A Gearhart/Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
10/01/91

JOB NUMBER: 911797 CUSTOMER: MARATHON OIL COMPANY ATTN: M. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 09/23/91
TIME SAMPLED.....: 14:20
WORK DESCRIPTION...: 10

Howell Water Well

LABORATORY I.D...: 911797-0009
DATE RECEIVED....: 09/26/91
TIME RECEIVED....: 15:40
REMARKS.....:

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OR MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	80	1	mg/L	325.2 (1)	09/27/91	D
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/30/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

OVED BY: Linda L Benbow

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"CONFIDENTIAL BUSINESS INFORMATION"

Western Atlas International
A Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
09/13/91

JOB NUMBER: 911689 CUSTOMER: MARATHON OIL COMPANY ATTN: DAVID LOUCH

CLIENT I.D.....: 32-03-144 IBGP PIPELINE
DATE SAMPLED.....: 09/09/91
TIME SAMPLED.....: 12:38
WORK DESCRIPTION...: 10

LABORATORY I.D...: 911689-0010
DATE RECEIVED....: 09/11/91
TIME RECEIVED....: 15:25
REMARKS.....:

Howell Water Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TEC
Chloride (Unfilt.)	80	1	mg/L	325.2 (1)	09/12/91	M
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/13/91	MR
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Noggle

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Western Atlas International
A Litton Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
08/30/91

JOB NUMBER: 911616 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/26/91
TIME SAMPLED.....: 11:06
WORK DESCRIPTION...: 10

LABORATORY I.D...: 911616-0010
DATE RECEIVED....: 08/28/91
TIME RECEIVED....: 15:26
REMARKS.....:

HOWELL WATER WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE T
Chloride (Unfilt.)	77	1	mg/L	325.2 (1)	08/29/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/30/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen G. Nafzger

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/23/91

JOB NUMBER: 911575 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/19/91
TIME SAMPLED.....: 08:50
WORK DESCRIPTION...: 10

LABORATORY I.D...: 911575-0010
DATE RECEIVED....: 08/21/91
TIME RECEIVED....: 16:06
REMARKS.....:

Howell Water Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	83	1	mg/L	325.2 (1)	08/21/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/22/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Hagger

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Howell Windmill

Western Atlas International
A Litton Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
10/01/91

JOB NUMBER: 911797 CUSTOMER: MARATHON OIL COMPANY ATTN: W. MINOR

CLIENT I.D.....: 32-03-14S (INDIAN BASIN
DATE SAMPLED.....: 09/23/91
TIME SAMPLED.....: 16:66
WORK DESCRIPTION...: 11

Howell Windmill Well

LABORATORY I.D...: 911797-0010
DATE RECEIVED....: 09/26/91
TIME RECEIVED....: 19:40
REMARKS.....: 1 VOA HAS BUBBLE-CL ONLY

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE
Chloride (Unfilt.)	21	1	mg/L	325.2 (1)	09/27/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/30/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Linda L. Burbus

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Western Atlas International
A Litton Dresser Company

CORE LABORATORIES

LABORATORY TESTS RESULTS
09/13/91

JOB NUMBER: 911689 CUSTOMER: MARATHON OIL COMPANY ATTN: DAVID LOUCH

CLIENT I.D.....: 32-03-144 IBGP PIPELINE
DATE SAMPLED.....: 09/09/91
TIME SAMPLED.....: 13:12
WORK DESCRIPTION...: 11

LABORATORY I.D...: 911689-0011
DATE RECEIVED....: 09/11/91
TIME RECEIVED....: 15:25
REMARKS.....:

Howell Windmill Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TE
Chloride (Unfilt.)	22	1	mg/L	325.2 (1)	09/12/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	09/13/91	M
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Naffziger

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Western Atlas International
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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/30/91

JOB NUMBER: 911616 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/26/91
TIME SAMPLED.....: 11:54
WORK DESCRIPTION...: 11

LABORATORY I.D...: 911616-0011
DATE RECEIVED....: 08/28/91
TIME RECEIVED....: 15:26
REMARKS.....: 1 VOA HAS BUBBLE;BROWN PAR

HOWELL WINDMILL WELL

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TI
Chloride (Unfilt.)	20	1	mg/L	325.2 (1)	08/29/91	
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/30/91	
Benzene	ND	1	ug/L			
Toluene	ND	1	ug/L			
Ethyl Benzene	ND	1	ug/L			
Xylenes	ND	1	ug/L			

APPROVED BY: Ellen J. Wagner

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CORE LABORATORIES

LABORATORY TESTS RESULTS
08/23/91

JOB NUMBER: 911575 CUSTOMER: MARATHON OIL COMPANY ATTN: W. NIXON

CLIENT I.D.....: 32-03-144 INDIAN BASIN
DATE SAMPLED.....: 08/19/91
TIME SAMPLED.....: 09:20
WORK DESCRIPTION...: 11

LABORATORY I.D...: 911575-0011
DATE RECEIVED....: 08/21/91
TIME RECEIVED....: 16:06
REMARKS.....:

Howell Windmill Well

TEST DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE T
Chloride (Unfilt.)	20	1	mg/L	325.2 (1)	08/21/91
8020 - AROMATIC VOLATILE ORGANICS		*1		8020 (2)	08/22/91
Benzene	ND	1	ug/L		
Toluene	ND	1	ug/L		
Ethyl Benzene	ND	1	ug/L		
Xylenes	ND	1	ug/L		

APPROVED BY: Ellen J. Mayger

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ANA-LAB CORP.
THE COMPLETE SERVICE LAB

2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

08/12/91

Environmental Bureau NM Oil D.
PO Box 2088
Santa Fe, NM 87504

Sample Identification: Rocky Arroyo Back Water
Collected By: DB
Date & Time Taken: 07/19/91 1955
On Site Data: Marathon Indian Basin
Other:
Back water down stream of road crossing east
of plant sample from west side of crossing.

Lab Sample Number: 191623 **Received:** 07/23/91 **Client:** SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Acrolein	ND(100)	ug/l	1426	08/03/91	EPA Method 8240	PM
Acrylonitrile	ND(100)	ug/l	1426	08/03/91	EPA Method 8240	PM
Benzene	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Bromoform	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Bromomethane	ND(10)	ug/l	1426	08/03/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Chlorobenzene	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Chloroethane	ND(10)	ug/l	1426	08/03/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10)	ug/l	1426	08/03/91	EPA Method 8240	PM
Chloroform	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Chloromethane	ND(10)	ug/l	1426	08/03/91	EPA Method 8240	PM
Dibromochloromethane	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Bromodichloromethane	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM

Continued

ANA-LAB CORP.
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Analytical Chemistry • Utility Operations

191623 Continued

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
1,1-Dichloroethene	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Dichlorodiflouromethane	ND(1.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
1,2-Dichloropropane	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Ethyl benzene	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Methylene Chloride	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
1,1,2,2-Tetrachloroethane	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Tetrachloroethene	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Toluene	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
1,1,1-Trichloroethane	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Trichloroethene	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Trichlorofluoromethane	ND(10)	ug/l	1426	08/03/91	EPA Method 8240	PM
Vinyl Chloride	ND(10)	ug/l	1426	08/03/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(5.0)	ug/l	1426	08/03/91	EPA Method 8240	PM
Xylenes	ND(10)	ug/l	1426	08/03/91	EPA Method 8240	PM
Benzene	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB
Ethyl benzene	<0.4	ug/l	0800	07/29/91	EPA Method 8020	KB
Toluene	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB
Xylenes	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB

Continued

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY

Reported detection limits are EPA suggested practical quantitation limits. Actual limit may vary with matrix.

Quality Assurance for the SET with Sample 191623

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
				Benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	75		100			0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	116	0800	07/29/91	KB
				Ethyl benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	90		100		111	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	86	0800	07/29/91	KB
				Toluene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	96		100		104	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	93	0800	07/29/91	KB
				Xylenes					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	86		100		115	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	81	0800	07/29/91	KB

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab NVA - LAB Contract No. 191623

OCD Sample No. 9107191955

Collection Date	Collection Time	Collected by —Person/Agency
9/07/19	1955	D. Boyer /OCD

SITE INFORMATION

Sample location Rocky Arroyo - Backwater

Collection Site Description Backwater down stream of First road crossing east of plant
Sample Soon west side of crossing

Township, Range, Section, Tract: | | | + | | + | + | | |

SEND FINAL REPORT TO ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLING CONDITIONS

☐ Bailed ☐ Pump
☒ Dipped ☐ Tap

pH(00400) —

Water Temp. (00010) —

Water level —

Discharge —

Sample type —

Conductivity (Uncorrected) — µmho

Conductivity at 25° C — µmho

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1

☒ **NF:** Whole sample (Non-filtered)
☐ **F:** Filtered in field with 0.45 µ membrane filter
☐ **PF:** Pre-filtered w/45 µ membrane filter

☒ **NA:** No acid added
☐ **A:** HCL
☐ **A:** 2ml H_2SO_4/L added
☐ **A:** 5ml conc. HNO_3 added
☐ **A:** 4ml fuming HNO_3 added
☒ P $HgCl_2$, Ice

FIELD COMMENTS:

Sheen also seen in puddle between road and backwater

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☒ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☐ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☐ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

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09/11/91

RECEIVED
SEP 13 1991
OIL CONSERVATION DIV.
SANTA FE

Environmental Bureau NM Oil D.
PO Box 2088
Santa Fe, NM 87504

Sample Identification: Rocky Arroyo
Collected By: DB
Date & Time Taken: 07/19/91 2002
On Site Data: Marathon Indian Basin
Other:
Upstream of 1st road crossing east of plant,
west end of crossing.

Lab Sample Number: 191624 **Received:** 07/23/91 Client: SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	110	mg/l as C	1900	08/13/91	EPA Method 310.1	BW
Boron	<.5	mg/l	1700	08/09/91	EPA Method 212.3	MB
Bromide	2	mg/l	1200	07/30/91	ASTM D3869 vol 11.02	ES
Cation-Anion Balance	2.5/2.5	meq/meq	1600	09/10/91		SK
Carbonate	<.5	mg/l	1600	08/14/91	APHA Method 263	BC
Calulated Total Dissolved Solids	190	ppm	1500	09/06/91	APHA Method 1030F	BP2
Specific Conductance	170 (On Site)	Micromhos	1402	07/19/91	EPA Method 120.1	SB
Fluoride	<1	mg/l	1400	08/06/91	EPA Method 340.1	BC
Bicarbonate	100	mg/l	1600	08/14/91	APHA Method 263	BC
Sulfate	30	mg/l	1030	08/08/91	EPA Method 375.4	MB
pH	6.5 (On Site)	SU	1402	07/19/91	EPA Method 150.1	SB
Chloride	5	mg/l	1400	08/08/91	EPA Method 325.3	HG
Silver	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Aluminum	8.0	mg/l	1100	07/30/91	EPA Method 6010	GDG
Arsenic	.009	mg/l	1600	08/14/91	EPA Method 206.2	GK

Continued

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Analytical Chemistry • Utility Operations

191624 Continued

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Barium	.08	mg/l	1100	07/30/91	EPA Method 6010	GDG
Beryllium	<.01	mg/l	1440	07/30/91	EPA Method 6010	GDG
Dissolved Calcium	40	mg/l	1045	07/26/91	EPA Method 6010	GDG
Cadmium	<.001	mg/l	1300	08/16/91	EPA Method 213.2	GK
Cobolt	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Chromium	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Copper	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Dissolved Iron	<.05	mg/l	1045	07/26/91	EPA Method 6010	GDG
Mercury	<.001	mg/l	1030	08/09/91	EPA Method 245.3	NT
Dissolved Potassium	10	mg/l	1045	07/26/91	EPA Method 6010	GDG
Dissolved Magnesium	3.0	mg/l	1045	07/26/91	EPA Method 6010	GDG
Dissolved Manganese	<.01	mg/l	1045	07/26/91	EPA Method 6010	GDG
Molybdenum	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Dissolved Sodium	<1	mg/l	1045	07/26/91	EPA Method 6010	GDG
Nickel	<.05	mg/l	1220	08/01/91	EPA Method 6010	GDG
Lead	.005	mg/l	1915	08/15/91	EPA Method 239.2	GK
Antimony	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Selenium	<.005	mg/l	2030	08/14/91	EPA Method 270.2	GK
Silicon	31	mg/l	1440	07/30/91	EPA Method 6010	GDG
Thallium	<.2	mg/l	1440	07/30/91	EPA Method 6010	GDG
Vanadium	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG

Continued

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Zinc	.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Acrolein	ND(100)	ug/l	1509	08/03/91	EPA Method 8240	PM
Acrylonitrile	ND(100)	ug/l	1509	08/03/91	EPA Method 8240	PM
Benzene	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Bromoform	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Bromomethane	ND(10)	ug/l	1509	08/03/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Chlorobenzene	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Chloroethane	ND(10)	ug/l	1509	08/03/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10)	ug/l	1509	08/03/91	EPA Method 8240	PM
Chloroform	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Chloromethane	ND(10)	ug/l	1509	08/03/91	EPA Method 8240	PM
Dibromochloromethane	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Bromodichloromethane	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Dichlorodiflouromethane	ND(1.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
1,2-Dichloropropane	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Ethyl benzene	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Methylene Chloride	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
1,1,2,2-Tetrachloroethane	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Tetrachloroethene	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Toluene	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
1,1,1-Trichloroethane	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Trichloroethene	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Trichlorofluoromethane	ND(10)	ug/l	1509	08/03/91	EPA Method 8240	PM
Vinyl Chloride	ND(10)	ug/l	1509	08/03/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(5.0)	ug/l	1509	08/03/91	EPA Method 8240	PM
Xylenes	ND(10)	ug/l	1509	08/03/91	EPA Method 8240	PM
Benzene	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB
Ethyl benzene	<0.4	ug/l	0800	07/29/91	EPA Method 8020	KB
Toluene	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB
Xylenes	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB

Reported detection limits are EPA suggested practical quantitation limits. Actual limit may vary with matrix.

Quality Assurance for the SET with Sample 191624

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
Alkalinity									
	Standard	2420	mg/l as C	2358		103	1900	08/13/91	BW
191618	Duplicate	300	mg/l as C	300		100	1900	08/13/91	BW
191618	Spike		mg/l as C			100	1900	08/13/91	BW
Boron									

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Quality Assurance for the SET with Sample 191624

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	.000	mg/l				1700	08/09/91	MB
	Standard	.51	mg/l	.50		102	1700	08/09/91	MB
191621	Duplicate	<.5	mg/l	<.5		100	1700	08/09/91	MB
				Bromide					
	Standard	100	mg/l	100		100	1200	07/30/91	ES
190679	Duplicate	3	mg/l	3		100	1200	07/30/91	ES
				Fluoride					
	Standard	5.0	mg/l	5.0		100	1400	08/06/91	BC
191618	Duplicate	<1	mg/l	<1		100	1400	08/06/91	BC
				Sulfate					
	Standard	98	mg/l	100		102	1030	08/08/91	MB
191239	Duplicate	10	mg/l	9		111	1030	08/08/91	MB
192196	Duplicate	130	mg/l	130		100	1030	08/08/91	MB
192196	Spike		mg/l		100	99	1030	08/08/91	MB
				Chloride					
	Standard	70	mg/l	71		101	1400	08/08/91	HG
191620	Duplicate	16	mg/l	15		106	1400	08/08/91	HG
				Silver					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	.20	mg/l	.20		100	1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	2.0	mg/l	2.0		100	1100	07/30/91	GDG
191930	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		1.0	82	1100	07/30/91	GDG
191620	Spike		mg/l		1.0	81	1100	07/30/91	GDG
				Aluminum					
	Blank	<.05	mg/l				1100	07/30/91	GDG
	Blank	<.05	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1100	07/30/91	GDG
	Standard	9.8	mg/l	10		102	1100	07/30/91	GDG
191930	Duplicate	.59	mg/l	.61		103	1100	07/30/91	GDG
191618	Duplicate	1.4	mg/l	1.4		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	105	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1100	07/30/91	GDG
				Arsenic					
	Blank	<.005	mg/l				1600	08/14/91	GK
	Standard	.099	mg/l	.100		101	1600	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
192240	Spike		mg/l		.100	91	1600	08/14/91	GK
				Barium					

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Quality Assurance for the SET with Sample 191624

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	.03	mg/l	.03		100	1100	07/30/91	GDG
191618	Duplicate	.15	mg/l	.15		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	101	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	101	1100	07/30/91	GDG
				Beryllium					
	Blank	<.01	mg/l				1440	07/30/91	GDG
	Standard	.41	mg/l	.40		102	1440	07/30/91	GDG
	Standard	2.0	mg/l	2.0		100	1440	07/30/91	GDG
191618	Duplicate	<.01	mg/l	<.01		100	1440	07/30/91	GDG
191620	Spike		mg/l		1.6	96	1440	07/30/91	GDG
				Dissolved Calcium					
	Blank	<.05	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	53	mg/l	50		106	1045	07/26/91	GDG
191620	Duplicate	160	mg/l	160		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	98	1045	07/26/91	GDG
				Cadmium					
	Blank	<.001	mg/l				1300	08/16/91	GK
	Standard	.002	mg/l	.002		100	1300	08/16/91	GK
191621	Duplicate	<.001	mg/l	<.001		100	1300	08/16/91	GK
				Cobolt					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1440	07/30/91	GDG
				Chromium					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.2	mg/l	5.0		104	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	<.05	mg/l	<.05		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	104	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	103	1100	07/30/91	GDG
				Copper					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 191624

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1100	07/30/91	GDG
	Standard	9.8	mg/l	10		102	1100	07/30/91	GDG
191930	Duplicate	.02	mg/l	.02		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	100	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	98	1100	07/30/91	GDG
				Dissolved Iron					
	Blank	<.05	mg/l				1045	07/26/91	GDG
	Standard	.93	mg/l	1.0		107	1045	07/26/91	GDG
	Standard	5.2	mg/l	5.0		104	1045	07/26/91	GDG
191620	Duplicate	<.05	mg/l	<.05		100	1045	07/26/91	GDG
191622	Spike		mg/l		2.0	103	1045	07/26/91	GDG
				Mercury					
	Blank	.002	mg/l				1030	08/09/91	NT
	Blank	<.05	mg/kg				1030	08/09/91	NT
	Standard	.010	mg/l	.010		100	1030	08/09/91	NT
191624	Duplicate	<.001	mg/l	<.001		100	1030	08/09/91	NT
192380	Duplicate	.52	mg/kg	.50		104	1030	08/09/91	NT
191624	Spike		mg/l		.010	98	1030	08/09/91	NT
192380	Spike		mg/kg		.010	117	1030	08/09/91	NT
				Dissolved Potassium					
	Blank	<2	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	48	mg/l	50		104	1045	07/26/91	GDG
191620	Duplicate	<2	mg/l	<2		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	117	1045	07/26/91	GDG
				Dissolved Magnesium					
	Blank	<.01	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	49	mg/l	50		102	1045	07/26/91	GDG
191620	Duplicate	60	mg/l	60		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	97	1045	07/26/91	GDG
				Dissolved Manganese					
	Blank	<.01	mg/l				1045	07/26/91	GDG
	Standard	1.0	mg/l	1.0		100	1045	07/26/91	GDG
	Standard	5.2	mg/l	5.0		104	1045	07/26/91	GDG
191620	Duplicate	.13	mg/l	.13		100	1045	07/26/91	GDG
191622	Spike		mg/l		2.0	105	1045	07/26/91	GDG
				Molybdenum					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1440	07/30/91	GDG
	Standard	10	mg/l	10		100	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG

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THE COMPLETE SERVICE LAB

2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 191624

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
191620	Spike		mg/l		2.0	100	1440	07/30/91	GDG
				Dissolved Sodium					
	Blank	<1	mg/l				1045	07/26/91	GDG
	Standard	9.8	mg/l	10		102	1045	07/26/91	GDG
	Standard	49	mg/l	50		102	1045	07/26/91	GDG
191620	Duplicate	13	mg/l	14		107	1045	07/26/91	GDG
191622	Spike		mg/l		18	82	1045	07/26/91	GDG
				Nickel					
	Blank	<.05	mg/l				1220	08/01/91	GDG
	Blank	<.05	mg/l				1220	08/01/91	GDG
	Standard	.78	mg/l	.80		103	1220	08/01/91	GDG
	Standard	1.1	mg/l	1.0		110	1220	08/01/91	GDG
	Standard	5.3	mg/l	5.0		106	1220	08/01/91	GDG
191930	Duplicate	<.05	mg/l	<.05		100	1220	08/01/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1220	08/01/91	GDG
191933	Spike		mg/l		4.0	100	1220	08/01/91	GDG
191620	Spike		mg/l		4.0	101	1220	08/01/91	GDG
				Lead					
	Blank	.002	mg/l				1915	08/15/91	GK
	Blank	<.001	mg/l				1915	08/15/91	GK
	Standard	.028	mg/l	.025		111	1915	08/15/91	GK
	Standard	.027	mg/l	.025		108	1915	08/15/91	GK
	Standard	.048	mg/l	.050		104	1915	08/15/91	GK
	Standard	.051	mg/l	.050		102	1915	08/15/91	GK
191621	Duplicate	.004	mg/l	.005		122	1915	08/15/91	GK
193075	Duplicate	.002	mg/l	.001		167	1915	08/15/91	GK
191621	Spike		mg/l		.020	100	1915	08/15/91	GK
193075	Spike		mg/l		.020	76	1915	08/15/91	GK
				Antimony					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1440	07/30/91	GDG
				Selenium					
	Blank	<.005	mg/l				2030	08/14/91	GK
	Standard	.097	mg/l	.100		103	2030	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
192237	Spike		mg/l		.100	108	2030	08/14/91	GK
				Silicon					
	Blank	<.1	mg/l				1440	07/30/91	GDG
	Standard	5.2	mg/l	5.0		104	1440	07/30/91	GDG
	Standard	9.7	mg/l	10		103	1440	07/30/91	GDG

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2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 191624

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
191618	Duplicate	20	mg/l	19		105	1440	07/30/91	GDG
191620	Spike		mg/l		2.0	100	1440	07/30/91	GDG
				Thallium					
	Blank	<.2	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.2	mg/l	<.2		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	95	1440	07/30/91	GDG
				Vanadium					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		6.0	100	1440	07/30/91	GDG
				Zinc					
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.3	mg/l	5.0		106	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	.05	mg/l	.06		118	1100	07/30/91	GDG
191618	Duplicate	.03	mg/l	.04		129	1100	07/30/91	GDG
191933	Spike		mg/l		2.0	99	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	99	1100	07/30/91	GDG
				Benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	75		100			0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	116	0800	07/29/91	KB
				Ethyl benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	90		100		111	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	86	0800	07/29/91	KB
				Toluene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	96		100		104	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	93	0800	07/29/91	KB
				Xylenes					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	86		100		115	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB

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2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • *Utility Operations*

Quality Assurance for the SET with Sample 191624

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
191938	Spike				100	81	0800	07/29/91	KB

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab 9107192002 Contract No. 19/624

OCD Sample No. BNA-Lab

Collection Date	Collection Time	Collected by—Person/Agency
9/07/19	2002	D. Boyer /OCD

SITE INFORMATION

Sample location: Rocky Arroyo

Collection Site Description: Upstream of 1st Road Crossing east of plant, west end of crossing

Township, Range, Section, Tract: | | + | | + | + | |

SEND FINAL REPORT TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLING CONDITIONS

- ☐ Bailed ☐ Pump
- ☒ Dipped ☐ Tap

pH(00400) 6.5(Strip)

Water Temp. (00010) 26.5

Water level: —

Discharge: —

Sample type: Grab

Conductivity (Uncorrected): 170 µmho

Conductivity at 25° C: µmho

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 3

3 ☒ **NF:** Whole sample (Non-filtered)
☐ **F:** Filtered in field with 0.45 µ membrane filter
☐ **PF:** Pre-filtered w/45 µ membrane filter

2 ☒ **NA:** No acid added
☐ **A:** HCL
☐ **A:** 2ml H_2SO_4/L added

1 ☒ **A:** 5ml conc. HNO_3 added
☐ **A:** 4ml fuming HNO_3 added
1 ☒ $PHgCl_2$, Ice

FIELD COMMENTS:

No odor, turbid

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☐ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☒ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☒ 031	Se	7740
☒ 005	SUITE	8010-8020	☐ 017	SVOC	625	☒ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☒ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☒ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

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2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

New Mexico

Customer Name	Cust. Code	Project Name	Contract # 001 033 032 030 028 008
Oil Conservation Division		Marathon Indian Basin	
Samplers: (Signature)	David Boyd OCD	No. Cont.	Tests

Sample No.	Date	Time	Sample ID	8020	Cations/Anions	ICAP Metals	Arsenic	Selenium	Mercury	PAH 8100		
1	91/07/19	0925	Borehole 83 (MW 57)	✓	✓	✓	✓	✓	✓			
2	91/07/19	1046	Field Blank	✓	**							
3	"	1055	Borehole B7A (MW 61A)	✓	✓	✓	✓	✓	✓			
4	"	1252	Borehole 86 (MW 60)	✓	✓	✓	✓	✓	✓	✓		
5	"	1448	Water Well #1	✓	✓	✓	✓	✓	✓			
6	"	1955	Rocky Arroyo Backwater	✓								
7	"	2002	Rocky Arroyo	✓	✓	✓	✓	✓	✓			

Relinquished by:	Date	Time	Received in Lab by:	Remarks:
D Boyd	91/07/20	1345		2 VOA Bottles; single Bottle
Johnny Robinson				

If New Client, please fill in the information on the reverse side.

7/19/91
Marathon Indian Basin
Ralph Skinner Eng Tech

Borehole 88 - started 7/19
E4600 S1800

Weather Partly Cloudy Warm ~80°

Borehole 83, MW 57

9107190~~0505~~ 0725

Sp. Cond 650 @ 22°C
pH 7 (strip)
Bailed ~2½ gallons
No odor
Sample for VOA, C/A, HM
Well drilled 6/19 Developed

Field Blank from Watts
Carried from Santa Fe
9107191046
VOA only

Borehole 87A, MW 61A

9107191055
Well drilled, Bailed ~2½ gal developed
No odor
Sp cond 1000 @ 22°C
pH 7 (strip)
Sample for VOA, C/A, HM

Borehole 86, MW 60

9107191252

Sp. cond 930 @ 21°C
pH 7
No odor
Sample for VOA, C/A, HM
Bailed ~2½ gal

1430 - Weather Rainy, Thundershower
Drilling on BH 88 began noon, 2½ hr when rain & lightning stopped

9107191448
Water Well #1

Sample for VOA, C/A, HM

(No pH or SP - Heavy Rain!

Rain from 1450 to past 1800
Heavy Rain 1450 to 1615

Rain Gage = 2.24" @ 1726
Total 2.29 @ 0710, 7/20

Lightning at plant - Power intermittent, fire in inlet compressor, liquids dumped to flares, plant restarted several times

1615 - Walked to dam, heavy runoff, lightning strike within ~200 yards. Run back to truck. Dams containing runoff except where between dams. Most area runoff to arroyo.

1845 - Pumper Lewis Chandler reports water over dams. Upstream runoff reached and topped down lower dam partially washed out. Arroyo w/in 1 ft of S. Bank Top. Called Artesia - Johnny Robertson took camera and filled pictures

9107191955 Rocky Arroyo - Backwater sheen
VOA only - No odor
Water over road at 1st crossing east of plant. Sheen is downstream of road but also in puddle between road and backwater

9107192002 Rocky Arroyo - Upstream of Road
SP. cond 179 @ 20.5 C
pH 6.5 (strip)
VOA, C/A, HM

Sample on south side of road, west end of crossing upstream
No sheen or odor

Saturday 7/20 - NO
Samples, inspection
only.
Water from runoff
did not reach US 285
or Pecos River - inspected
~~river~~ arroyo bottoms
east of highway bridge

#1 plant, lower dam
partially washed over.
Marathon sampling there
and at submerged pit.

Frac tank overflowed
near ~~Well~~ #4-57 approx
60 barrels condensate
on ground, some
recovered.

Line 4 pipeline has kinks,
will replace.

Location 7 MOC #1
" 8 MOC #1A

#9 - Lee Water Tank 0.9 Mi
W of Plant gate on N side Rd.

Location #1 LYMANS 2-300 yards
from First Road crossing
east of plant.

Location #2 Upper Indian Hills
Spring West

Location #6 Upper Indian Hills
Spring East
(Below Mile 47)
1 Mile east of St. Hwy/CR
intersection

Location #4 Beibelle Water Well
0.9 past MM 47
1.9 Past Hwy 137/CR
Intersection

Location #3 Lower Indian Hills
Spring 350 yards
up from ~~Bridge~~ Beibelle
Well

Location #5 Spring Feeding surface
~~Water~~ 0.2 Mile E. Beibelle

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2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

09/11/91

Environmental Bureau NM Oil D.
PO Box 2088
Santa Fe, NM 87504

Sample Identification: Water Well #1
Collected By: DB
Date & Time Taken: 07/19/91 1448
On Site Data: Marathon Indian Basin
Other:
Sample From Valve At Pump,
Run-10 Minutes

Lab Sample Number: 191622 **Received:** 07/23/91 Client: SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	260	mg/l as C	1900	08/13/91	EPA Method 310.1	BW
Boron	<.5	mg/l	1700	08/09/91	EPA Method 212.3	MB
Bromide	7	mg/l	1200	07/30/91	ASTM D3869 vol 11.02	ES
Cation-Anion Balance	9.7/9.4	meq/meq	1600	09/10/91		SK
Carbonate	<.5	mg/l	1600	08/14/91	APHA Method 263	BC
Calulated Total Dissolved Solids	620	ppm	1500	09/06/91	APHA Method 1030F	BP2
Specific Conductance	650 (On Site)	Micromhos	1443	07/19/91	EPA Method 120.1	DB
Fluoride	1.3	mg/l	1400	08/06/91	EPA Method 340.1	BC
Bicarbonate	230	mg/l	1600	08/14/91	APHA Method 263	BC
Sulfate	200	mg/l	1030	08/08/91	EPA Method 375.4	MB
pH	7.0	SU	2130	07/23/91	EPA Method 150.1	SB
Chloride	19	mg/l	1400	08/08/91	EPA Method 325.3	HG
Silver	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Aluminum	.14	mg/l	1100	07/30/91	EPA Method 6010	GDG
Arsenic	<.005	mg/l	1600	08/14/91	EPA Method 206.2	GK

Continued

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Analytical Chemistry • Utility Operations

191622 Continued

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Barium	.03	mg/l	1100	07/30/91	EPA Method 6010	GDG
Beryllium	<.01	mg/l	1440	07/30/91	EPA Method 6010	GDG
Dissolved Calcium	120	mg/l	1045	07/26/91	EPA Method 6010	GDG
Cadmium	.004	mg/l	1300	08/16/91	EPA Method 213.2	GK
Cobolt	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Chromium	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Copper	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Dissolved Iron	<.05	mg/l	1045	07/26/91	EPA Method 6010	GDG
Mercury	<.001	mg/l	1030	08/09/91	EPA Method 245.3	NT
Dissolved Potassium	<2	mg/l	1045	07/26/91	EPA Method 6010	GDG
Dissolved Magnesium	40	mg/l	1045	07/26/91	EPA Method 6010	GDG
Dissolved Manganese	<.01	mg/l	1045	07/26/91	EPA Method 6010	GDG
Molybdenum	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Dissolved Sodium	10	mg/l	1045	07/26/91	EPA Method 6010	GDG
Nickel	<.05	mg/l	1220	08/01/91	EPA Method 6010	GDG
Lead	<.001	mg/l	1915	08/15/91	EPA Method 239.2	GK
Antimony	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Selenium	<.005	mg/l	2030	08/14/91	EPA Method 270.2	GK
Silicon	9.2	mg/l	1440	07/30/91	EPA Method 6010	GDG
Thallium	<.2	mg/l	1440	07/30/91	EPA Method 6010	GDG
Vanadium	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG

Continued

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Analytical Chemistry • Utility Operations

191622 Continued

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Zinc	.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Acrolein	ND(100)	ug/l	1343	08/03/91	EPA Method 8240	PM
Acrylonitrile	ND(100)	ug/l	1343	08/03/91	EPA Method 8240	PM
Benzene	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Bromoform	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Bromomethane	ND(10)	ug/l	1343	08/03/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Chlorobenzene	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Chloroethane	ND(10)	ug/l	1343	08/03/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10)	ug/l	1343	08/03/91	EPA Method 8240	PM
Chloroform	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Chloromethane	ND(10)	ug/l	1343	08/03/91	EPA Method 8240	PM
Dibromochloromethane	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Bromodichloromethane	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Dichlorodiflouromethane	ND(1.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
1,2-Dichloropropane	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM

Continued

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Analytical Chemistry • Utility Operations

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Ethyl benzene	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Methylene Chloride	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
1,1,2,2-Tetrachloroethane	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Tetrachloroethene	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Toluene	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
1,1,1-Trichloroethane	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Trichloroethene	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Trichlorofluoromethane	ND(10)	ug/l	1343	08/03/91	EPA Method 8240	PM
Vinyl Chloride	ND(10)	ug/l	1343	08/03/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(5.0)	ug/l	1343	08/03/91	EPA Method 8240	PM
Xylenes	ND(10)	ug/l	1343	08/03/91	EPA Method 8240	PM
Benzene	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB
Ethyl benzene	<0.4	ug/l	0800	07/29/91	EPA Method 8020	KB
Toluene	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB
Xylenes	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB

Reported detection limits are EPA suggested practical quantitation limits. Actual limit may vary with matrix.

Quality Assurance for the SET with Sample 191622

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
Alkalinity									
	Standard	2420	mg/l as C	2358		103	1900	08/13/91	BW
191618	Duplicate	300	mg/l as C	300		100	1900	08/13/91	BW
191618	Spike		mg/l as C			100	1900	08/13/91	BW
Boron									

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Quality Assurance for the SET with Sample 191622

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	.000	mg/l				1700	08/09/91	MB
	Standard	.51	mg/l	.50		102	1700	08/09/91	MB
191621	Duplicate	<.5	mg/l	<.5		100	1700	08/09/91	MB
				Bromide					
	Standard	100	mg/l	100		100	1200	07/30/91	ES
190679	Duplicate	3	mg/l	3		100	1200	07/30/91	ES
				Fluoride					
	Standard	5.0	mg/l	5.0		100	1400	08/06/91	BC
191618	Duplicate	<1	mg/l	<1		100	1400	08/06/91	BC
				Sulfate					
	Standard	98	mg/l	100		102	1030	08/08/91	MB
191239	Duplicate	10	mg/l	9		111	1030	08/08/91	MB
192196	Duplicate	130	mg/l	130		100	1030	08/08/91	MB
192196	Spike		mg/l		100	99	1030	08/08/91	MB
				pH					
	Standard	Calibrate	SU	7.0			2130	07/23/91	SB
	Standard	10.0	SU	10.0		100	2130	07/23/91	SB
				Chloride					
	Standard	70	mg/l	71		101	1400	08/08/91	HG
191620	Duplicate	16	mg/l	15		106	1400	08/08/91	HG
				Silver					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	.20	mg/l	.20		100	1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	2.0	mg/l	2.0		100	1100	07/30/91	GDG
191930	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		1.0	82	1100	07/30/91	GDG
191620	Spike		mg/l		1.0	81	1100	07/30/91	GDG
				Aluminum					
	Blank	<.05	mg/l				1100	07/30/91	GDG
	Blank	<.05	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1100	07/30/91	GDG
	Standard	9.8	mg/l	10		102	1100	07/30/91	GDG
191930	Duplicate	.59	mg/l	.61		103	1100	07/30/91	GDG
191618	Duplicate	1.4	mg/l	1.4		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	105	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1100	07/30/91	GDG
				Arsenic					
	Blank	<.005	mg/l				1600	08/14/91	GK
	Standard	.099	mg/l	.100		101	1600	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK

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Quality Assurance for the SET with Sample 191622

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
191622	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
192240	Spike		mg/l		.100	91	1600	08/14/91	GK
				Barium					
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	.03	mg/l	.03		100	1100	07/30/91	GDG
191618	Duplicate	.15	mg/l	.15		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	101	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	101	1100	07/30/91	GDG
				Beryllium					
	Blank	<.01	mg/l				1440	07/30/91	GDG
	Standard	.41	mg/l	.40		102	1440	07/30/91	GDG
	Standard	2.0	mg/l	2.0		100	1440	07/30/91	GDG
191618	Duplicate	<.01	mg/l	<.01		100	1440	07/30/91	GDG
191620	Spike		mg/l		1.6	96	1440	07/30/91	GDG
				Dissolved Calcium					
	Blank	<.05	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	53	mg/l	50		106	1045	07/26/91	GDG
191620	Duplicate	160	mg/l	160		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	98	1045	07/26/91	GDG
				Cadmium					
	Blank	<.001	mg/l				1300	08/16/91	GK
	Standard	.002	mg/l	.002		100	1300	08/16/91	GK
191621	Duplicate	<.001	mg/l	<.001		100	1300	08/16/91	GK
				Cobolt					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1440	07/30/91	GDG
				Chromium					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.2	mg/l	5.0		104	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	<.05	mg/l	<.05		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	104	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	103	1100	07/30/91	GDG
				Copper					

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Quality Assurance for the SET with Sample 191622

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1100	07/30/91	GDG
	Standard	9.8	mg/l	10		102	1100	07/30/91	GDG
191930	Duplicate	.02	mg/l	.02		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	100	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	98	1100	07/30/91	GDG
				Dissolved Iron					
	Blank	<.05	mg/l				1045	07/26/91	GDG
	Standard	.93	mg/l	1.0		107	1045	07/26/91	GDG
	Standard	5.2	mg/l	5.0		104	1045	07/26/91	GDG
191620	Duplicate	<.05	mg/l	<.05		100	1045	07/26/91	GDG
191622	Spike		mg/l		2.0	103	1045	07/26/91	GDG
				Mercury					
	Blank	.002	mg/l				1030	08/09/91	NT
	Blank	<.05	mg/kg				1030	08/09/91	NT
	Standard	.010	mg/l	.010		100	1030	08/09/91	NT
191624	Duplicate	<.001	mg/l	<.001		100	1030	08/09/91	NT
192380	Duplicate	.52	mg/kg	.50		104	1030	08/09/91	NT
191624	Spike		mg/l		.010	98	1030	08/09/91	NT
192380	Spike		mg/kg		.010	117	1030	08/09/91	NT
				Dissolved Potassium					
	Blank	<2	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	48	mg/l	50		104	1045	07/26/91	GDG
191620	Duplicate	<2	mg/l	<2		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	117	1045	07/26/91	GDG
				Dissolved Magnesium					
	Blank	<.01	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	49	mg/l	50		102	1045	07/26/91	GDG
191620	Duplicate	60	mg/l	60		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	97	1045	07/26/91	GDG
				Dissolved Manganese					
	Blank	<.01	mg/l				1045	07/26/91	GDG
	Standard	1.0	mg/l	1.0		100	1045	07/26/91	GDG
	Standard	5.2	mg/l	5.0		104	1045	07/26/91	GDG
191620	Duplicate	.13	mg/l	.13		100	1045	07/26/91	GDG
191622	Spike		mg/l		2.0	105	1045	07/26/91	GDG
				Molybdenum					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1440	07/30/91	GDG

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Quality Assurance for the SET with Sample 191622

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	10	mg/l	10		100	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		2.0	100	1440	07/30/91	GDG
				Dissolved Sodium					
	Blank	<1	mg/l				1045	07/26/91	GDG
	Standard	9.8	mg/l	10		102	1045	07/26/91	GDG
	Standard	49	mg/l	50		102	1045	07/26/91	GDG
191620	Duplicate	13	mg/l	14		107	1045	07/26/91	GDG
191622	Spike		mg/l		18	82	1045	07/26/91	GDG
				Nickel					
	Blank	<.05	mg/l				1220	08/01/91	GDG
	Blank	<.05	mg/l				1220	08/01/91	GDG
	Standard	.78	mg/l	.80		103	1220	08/01/91	GDG
	Standard	1.1	mg/l	1.0		110	1220	08/01/91	GDG
	Standard	5.3	mg/l	5.0		106	1220	08/01/91	GDG
191930	Duplicate	<.05	mg/l	<.05		100	1220	08/01/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1220	08/01/91	GDG
191933	Spike		mg/l		4.0	100	1220	08/01/91	GDG
191620	Spike		mg/l		4.0	101	1220	08/01/91	GDG
				Lead					
	Blank	.002	mg/l				1915	08/15/91	GK
	Blank	<.001	mg/l				1915	08/15/91	GK
	Standard	.028	mg/l	.025		111	1915	08/15/91	GK
	Standard	.027	mg/l	.025		108	1915	08/15/91	GK
	Standard	.048	mg/l	.050		104	1915	08/15/91	GK
	Standard	.051	mg/l	.050		102	1915	08/15/91	GK
191621	Duplicate	.004	mg/l	.005		122	1915	08/15/91	GK
193075	Duplicate	.002	mg/l	.001		167	1915	08/15/91	GK
191621	Spike		mg/l		.020	100	1915	08/15/91	GK
193075	Spike		mg/l		.020	76	1915	08/15/91	GK
				Antimony					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1440	07/30/91	GDG
				Selenium					
	Blank	<.005	mg/l				2030	08/14/91	GK
	Standard	.097	mg/l	.100		103	2030	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
192237	Spike		mg/l		.100	108	2030	08/14/91	GK
				Silicon					
	Blank	<.1	mg/l				1440	07/30/91	GDG

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Quality Assurance for the SET with Sample 191622

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	5.2	mg/l	5.0		104	1440	07/30/91	GDG
	Standard	9.7	mg/l	10		103	1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
191618	Duplicate	20	mg/l	19		105	1440	07/30/91	GDG
191620	Spike		mg/l		2.0	100	1440	07/30/91	GDG
				Thallium					
	Blank	<.2	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.2	mg/l	<.2		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	95	1440	07/30/91	GDG
				Vanadium					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		6.0	100	1440	07/30/91	GDG
				Zinc					
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.3	mg/l	5.0		106	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	.05	mg/l	.06		118	1100	07/30/91	GDG
191618	Duplicate	.03	mg/l	.04		129	1100	07/30/91	GDG
191933	Spike		mg/l		2.0	99	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	99	1100	07/30/91	GDG
				Benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	75		100			0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	116	0800	07/29/91	KB
				Ethyl benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	90		100		111	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	86	0800	07/29/91	KB
				Toluene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	96		100		104	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	93	0800	07/29/91	KB
				Xylenes					
	Blank	<5.0	ug/l				0800	07/29/91	KB

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Analytical Chemistry • *Utility Operations*

Quality Assurance for the SET with Sample 191622

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	86		100		115	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	81	0800	07/29/91	KB

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab ANA-LAB Contract No. 191622

OCD Sample No. 910719 1448

Collection Date	Collection Time	Collected by —Person/Agency
91/07/19	1448	R. Skinner/Marathon, D. Boyer /OCD

SITE INFORMATION

Sample location: Marathon Indian Basin, Water Well #1

Collection Site Description:

Township, Range, Section, Tract: | | | + | | + | + | | |

SEND FINAL REPORT TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLING CONDITIONS

- ☐ Bailed ☒ Pump
- ☐ Dipped ☐ Tap

Water level	—
Discharge	—
Sample type	Grab
pH(00400)	—
Conductivity (Uncorrected)	— µmho
Water Temp. (00010)	—
Conductivity at 25° C	— µmho

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 3

3 ☒ **NF:** Whole sample (Non-filtered)
☐ **F:** Filtered in field with 0.45 µ membrane filter
☐ **PF:** Pre-filtered w/45 µ membrane filter

2 ☒ **NA:** No acid added
☐ **A:** HCL
☐ **A:** 2ml H_2SO_4/L added

1 ☒ **A:** 5ml conc. HNO_3 added
☐ **A:** 4ml fuming HNO_3 added
1 ☒ $HgCl_2$ Ice

FIELD COMMENTS:

Sample from valve at pump, run 10 minutes

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☐ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☐ 005	SUITE	8010-8020	☐ 017	SVOC	625	☐ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☐ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

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Analytical Chemistry • Utility Operations

09/11/91

Environmental Bureau NM Oil D.
PO Box 2088
Santa Fe, NM 87504

RECEIVED
SEP 13 1991
OIL CONSERVATION DIV.
SANTA FE

Sample Identification: Borehole 83 (MW 57)
Collected By: DB
Date & Time Taken: 07/19/91 0925
On Site Data: Marathon Indian Basin
Other:
Bailed-2 1/2 Gallons, No Odor
Drilled 6/19, Completed 6/25

Lab Sample Number: 191618 **Received:** 07/23/91 Client: SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	300	mg/l as C	1900	08/13/91	EPA Method 310.1	BW
Boron	<.5	mg/l	1700	08/09/91	EPA Method 212.3	MB
Bromide	4	mg/l	1200	07/30/91	ASTM D3869 vol 11.02	ES
Cation-Anion Balance	7.3/7.1	meq/meq	1600	09/10/91		SK
Carbonate	2.0	mg/l	1600	08/14/91	APHA Method 263	BC
Calulated Total Dissolved Solids	510	ppm	1500	09/06/91	APHA Method 1030F	BP2
Specific Conductance	650 (On Site)	Micromhos	0925	07/19/91	EPA Method 120.1	SB
Fluoride	<1	mg/l	1400	08/06/91	EPA Method 340.1	BC
Bicarbonate	300	mg/l	1600	08/14/91	APHA Method 263	BC
Sulfate	60	mg/l	1030	08/08/91	EPA Method 375.4	MB
pH	7.0 (On Site)	SU	0925	07/19/91	EPA Method 150.1	SB
Chloride	21	mg/l	1400	08/08/91	EPA Method 325.3	HG
Silver	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Aluminum	1.4	mg/l	1100	07/30/91	EPA Method 6010	GDG
Arsenic	<.005	mg/l	1600	08/14/91	EPA Method 206.2	GK

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Analytical Chemistry • Utility Operations

191618 Continued

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Barium	.15	mg/l	1100	07/30/91	EPA Method 6010	GDG
Beryllium	<.01	mg/l	1440	07/30/91	EPA Method 6010	GDG
Dissolved Calcium	90	mg/l	1045	07/26/91	EPA Method 6010	GDG
Cadmium	<.001	mg/l	1300	08/16/91	EPA Method 213.2	GK
Cobolt	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Chromium	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Copper	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Dissolved Iron	<.05	mg/l	1045	07/26/91	EPA Method 6010	GDG
Mercury	<.001	mg/l	1030	08/09/91	EPA Method 245.3	NT
Dissolved Potassium	<2	mg/l	1045	07/26/91	EPA Method 6010	GDG
Dissolved Magnesium	30	mg/l	1045	07/26/91	EPA Method 6010	GDG
Dissolved Manganese	<.01	mg/l	1045	07/26/91	EPA Method 6010	GDG
Molybdenum	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Dissolved Sodium	7.9	mg/l	1045	07/26/91	EPA Method 6010	GDG
Nickel	<.05	mg/l	1220	08/01/91	EPA Method 6010	GDG
Lead	.003	mg/l	1915	08/15/91	EPA Method 239.2	GK
Antimony	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Selenium	<.005	mg/l	2030	08/14/91	EPA Method 270.2	GK
Silicon	20	mg/l	1440	07/30/91	EPA Method 6010	GDG
Thallium	<.2	mg/l	1440	07/30/91	EPA Method 6010	GDG
Vanadium	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Zinc	.04	mg/l	1100	07/30/91	EPA Method 6010	GDG
Acrolein	ND(100)	ug/l	1047	08/03/91	EPA Method 8240	PM
Acrylonitrile	ND(100)	ug/l	1047	08/03/91	EPA Method 8240	PM
Benzene	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Bromoform	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Bromomethane	ND(10)	ug/l	1047	08/03/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Chlorobenzene	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Chloroethane	ND(10)	ug/l	1047	08/03/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10)	ug/l	1047	08/03/91	EPA Method 8240	PM
Chloroform	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Chloromethane	ND(10)	ug/l	1047	08/03/91	EPA Method 8240	PM
Dibromochloromethane	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Bromodichloromethane	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Dichlorodiflouromethane	ND(1.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
1,2-Dichloropropane	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Ethyl benzene	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Methylene Chloride	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
1,1,2,2-Tetrachloroethane	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Tetrachloroethene	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Toluene	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
1,1,1-Trichloroethane	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Trichloroethene	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Trichlorofluoromethane	ND(10)	ug/l	1047	08/03/91	EPA Method 8240	PM
Vinyl Chloride	ND(10)	ug/l	1047	08/03/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(5.0)	ug/l	1047	08/03/91	EPA Method 8240	PM
Xylenes	ND(10)	ug/l	1047	08/03/91	EPA Method 8240	PM
Benzene	0.5	ug/l	0800	07/29/91	EPA Method 8020	KB
Ethyl benzene	<0.4	ug/l	0800	07/29/91	EPA Method 8020	KB
Toluene	0.2	ug/l	0800	07/29/91	EPA Method 8020	KB
Xylenes	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB

Reported detection limits are EPA suggested practical quantitation limits. Actual limit may vary with matrix.

Quality Assurance for the SET with Sample 191618

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
Alkalinity									
	Standard	2420	mg/l as C	2358		103	1900	08/13/91	BW
191618	Duplicate	300	mg/l as C	300		100	1900	08/13/91	BW
191618	Spike		mg/l as C			100	1900	08/13/91	BW
Boron									

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Quality Assurance for the SET with Sample 191618

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	.000	mg/l				1700	08/09/91	MB
	Standard	.51	mg/l	.50		102	1700	08/09/91	MB
191621	Duplicate	<.5	mg/l	<.5		100	1700	08/09/91	MB
				Bromide					
	Standard	100	mg/l	100		100	1200	07/30/91	ES
190679	Duplicate	3	mg/l	3		100	1200	07/30/91	ES
				Fluoride					
	Standard	5.0	mg/l	5.0		100	1400	08/06/91	BC
191618	Duplicate	<1	mg/l	<1		100	1400	08/06/91	BC
				Sulfate					
	Standard	98	mg/l	100		102	1030	08/08/91	MB
191239	Duplicate	10	mg/l	9		111	1030	08/08/91	MB
192196	Duplicate	130	mg/l	130		100	1030	08/08/91	MB
192196	Spike		mg/l		100	99	1030	08/08/91	MB
				Chloride					
	Standard	70	mg/l	71		101	1400	08/08/91	HG
191620	Duplicate	16	mg/l	15		106	1400	08/08/91	HG
				Silver					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	.20	mg/l	.20		100	1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	2.0	mg/l	2.0		100	1100	07/30/91	GDG
191930	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		1.0	82	1100	07/30/91	GDG
191620	Spike		mg/l		1.0	81	1100	07/30/91	GDG
				Aluminum					
	Blank	<.05	mg/l				1100	07/30/91	GDG
	Blank	<.05	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1100	07/30/91	GDG
	Standard	9.8	mg/l	10		102	1100	07/30/91	GDG
191930	Duplicate	.59	mg/l	.61		103	1100	07/30/91	GDG
191618	Duplicate	1.4	mg/l	1.4		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	105	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1100	07/30/91	GDG
				Arsenic					
	Blank	<.005	mg/l				1600	08/14/91	GK
	Standard	.099	mg/l	.100		101	1600	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
192240	Spike		mg/l		.100	91	1600	08/14/91	GK
				Barium					

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Quality Assurance for the SET with Sample 191618

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	.03	mg/l	.03		100	1100	07/30/91	GDG
191618	Duplicate	.15	mg/l	.15		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	101	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	101	1100	07/30/91	GDG
				Beryllium					
	Blank	<.01	mg/l				1440	07/30/91	GDG
	Standard	.41	mg/l	.40		102	1440	07/30/91	GDG
	Standard	2.0	mg/l	2.0		100	1440	07/30/91	GDG
191618	Duplicate	<.01	mg/l	<.01		100	1440	07/30/91	GDG
191620	Spike		mg/l		1.6	96	1440	07/30/91	GDG
				Dissolved Calcium					
	Blank	<.05	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	53	mg/l	50		106	1045	07/26/91	GDG
191620	Duplicate	160	mg/l	160		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	98	1045	07/26/91	GDG
				Cadmium					
	Blank	<.001	mg/l				1300	08/16/91	GK
	Standard	.002	mg/l	.002		100	1300	08/16/91	GK
191621	Duplicate	<.001	mg/l	<.001		100	1300	08/16/91	GK
				Cobolt					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1440	07/30/91	GDG
				Chromium					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.2	mg/l	5.0		104	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	<.05	mg/l	<.05		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	104	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	103	1100	07/30/91	GDG
				Copper					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG

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Quality Assurance for the SET with Sample 191618

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1100	07/30/91	GDG
	Standard	9.8	mg/l	10		102	1100	07/30/91	GDG
191930	Duplicate	.02	mg/l	.02		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	100	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	98	1100	07/30/91	GDG
				Dissolved Iron					
	Blank	<.05	mg/l				1045	07/26/91	GDG
	Standard	.93	mg/l	1.0		107	1045	07/26/91	GDG
	Standard	5.2	mg/l	5.0		104	1045	07/26/91	GDG
191620	Duplicate	<.05	mg/l	<.05		100	1045	07/26/91	GDG
191622	Spike		mg/l		2.0	103	1045	07/26/91	GDG
				Mercury					
	Blank	.002	mg/l				1030	08/09/91	NT
	Blank	<.05	mg/kg				1030	08/09/91	NT
	Standard	.010	mg/l	.010		100	1030	08/09/91	NT
191624	Duplicate	<.001	mg/l	<.001		100	1030	08/09/91	NT
192380	Duplicate	.52	mg/kg	.50		104	1030	08/09/91	NT
191624	Spike		mg/l		.010	98	1030	08/09/91	NT
192380	Spike		mg/kg		.010	117	1030	08/09/91	NT
				Dissolved Potassium					
	Blank	<2	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	48	mg/l	50		104	1045	07/26/91	GDG
191620	Duplicate	<2	mg/l	<2		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	117	1045	07/26/91	GDG
				Dissolved Magnesium					
	Blank	<.01	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	49	mg/l	50		102	1045	07/26/91	GDG
191620	Duplicate	60	mg/l	60		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	97	1045	07/26/91	GDG
				Dissolved Manganese					
	Blank	<.01	mg/l				1045	07/26/91	GDG
	Standard	1.0	mg/l	1.0		100	1045	07/26/91	GDG
	Standard	5.2	mg/l	5.0		104	1045	07/26/91	GDG
191620	Duplicate	.13	mg/l	.13		100	1045	07/26/91	GDG
191622	Spike		mg/l		2.0	105	1045	07/26/91	GDG
				Molybdenum					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1440	07/30/91	GDG
	Standard	10	mg/l	10		100	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG

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Quality Assurance for the SET with Sample 191618

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
191620	Spike		mg/l		2.0	100	1440	07/30/91	GDG
				Dissolved Sodium					
	Blank	<1	mg/l				1045	07/26/91	GDG
	Standard	9.8	mg/l	10		102	1045	07/26/91	GDG
	Standard	49	mg/l	50		102	1045	07/26/91	GDG
191620	Duplicate	13	mg/l	14		107	1045	07/26/91	GDG
191622	Spike		mg/l		18	82	1045	07/26/91	GDG
				Nickel					
	Blank	<.05	mg/l				1220	08/01/91	GDG
	Blank	<.05	mg/l				1220	08/01/91	GDG
	Standard	.78	mg/l	.80		103	1220	08/01/91	GDG
	Standard	1.1	mg/l	1.0		110	1220	08/01/91	GDG
	Standard	5.3	mg/l	5.0		106	1220	08/01/91	GDG
191930	Duplicate	<.05	mg/l	<.05		100	1220	08/01/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1220	08/01/91	GDG
191933	Spike		mg/l		4.0	100	1220	08/01/91	GDG
191620	Spike		mg/l		4.0	101	1220	08/01/91	GDG
				Lead					
	Blank	.002	mg/l				1915	08/15/91	GK
	Blank	<.001	mg/l				1915	08/15/91	GK
	Standard	.028	mg/l	.025		111	1915	08/15/91	GK
	Standard	.027	mg/l	.025		108	1915	08/15/91	GK
	Standard	.048	mg/l	.050		104	1915	08/15/91	GK
	Standard	.051	mg/l	.050		102	1915	08/15/91	GK
191621	Duplicate	.004	mg/l	.005		122	1915	08/15/91	GK
193075	Duplicate	.002	mg/l	.001		167	1915	08/15/91	GK
191621	Spike		mg/l		.020	100	1915	08/15/91	GK
193075	Spike		mg/l		.020	76	1915	08/15/91	GK
				Antimony					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1440	07/30/91	GDG
				Selenium					
	Blank	<.005	mg/l				2030	08/14/91	GK
	Standard	.097	mg/l	.100		103	2030	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
192237	Spike		mg/l		.100	108	2030	08/14/91	GK
				Silicon					
	Blank	<.1	mg/l				1440	07/30/91	GDG
	Standard	5.2	mg/l	5.0		104	1440	07/30/91	GDG
	Standard	9.7	mg/l	10		103	1440	07/30/91	GDG

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Quality Assurance for the SET with Sample 191618

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
191618	Duplicate	20	mg/l	19		105	1440	07/30/91	GDG
191620	Spike		mg/l		2.0	100	1440	07/30/91	GDG
				Thallium					
	Blank	<.2	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.2	mg/l	<.2		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	95	1440	07/30/91	GDG
				Vanadium					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		6.0	100	1440	07/30/91	GDG
				Zinc					
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.3	mg/l	5.0		106	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	.05	mg/l	.06		118	1100	07/30/91	GDG
191618	Duplicate	.03	mg/l	.04		129	1100	07/30/91	GDG
191933	Spike		mg/l		2.0	99	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	99	1100	07/30/91	GDG
				Benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	75		100			0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	116	0800	07/29/91	KB
				Ethyl benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	90		100		111	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	86	0800	07/29/91	KB
				Toluene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	96		100		104	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	93	0800	07/29/91	KB
				Xylenes					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	86		100		115	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB

ANA-LAB CORP.
THE COMPLETE SERVICE LAB

2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • *Utility Operations*

Quality Assurance for the SET with Sample 191618

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
191938	Spike				100	81	0800	07/29/91	KB

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab ANA-LAB Contract No. 19618

OCD Sample No. 910719 0925

Collection Date	Collection Time	Collected by —Person/Agency
9/07/19	0925	Boyer, OCD / Ralph Skinner, Marathon

SITE INFORMATION

Sample location: Marathon Indian Basin Borehole 83 (MW 57)

Collection Site Description:

Township, Range, Section, Tract: | | | + | | + | + | | |

SEND FINAL REPORT TO
ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLING CONDITIONS

☒ Bailed ☐ Pump ☐ Dipped ☐ Tap

pH(00400) 7 (STRIP)

Water Temp. (00010) 22C

Water level: —

Discharge: —

Sample type: Grab

Conductivity (Uncorrected) 650 µmho

Conductivity at 25° C µmho

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 3

3 ☒ **NF:** Whole sample (Non-filtered)
☐ **F:** Filtered in field with 0.45 µ membrane filter
☐ **PF:** Pre-filtered w/45 µ membrane filter

2 ☒ **NA:** No acid added / ☒ **A:** 5ml conc. HNO_3 added
☐ **A:** HCL ☐ **A:** 4ml fuming HNO_3 added
☐ **A:** 2ml H_2SO_4/L added 1 ☒ **A:** Mercuric chloride

FIELD COMMENTS: & Ice

~~Bailed~~ Bailed ~ 2 1/2 Gallons, NO odor
Drilled 6/19, Completed 6/25

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☐ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☒ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☒ 031	Se	7740
☒ 005	SUITE	8010-8020	☐ 017	SVOC	625	☒ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☒ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
~~☒ 008~~	~~PAH~~	~~8100~~	☐ 020	O&G	9070	☐ 035	NITRATE	
☒ 009	PAH	610	☒ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

ANA-LAB CORP.
THE COMPLETE SERVICE LAB

2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

OIL CONSERVATION DIVISION
'91 AUG 14 AM 8 40
RECEIVED

08/12/91

RECEIVED
AUG 14 1991
OIL CONSERVATION DIV.
SANTA FE

Environmental Bureau NM Oil D.
PO Box 2088
Santa Fe, NM 87504

Sample Identification: Field Blank
Collected By: DB
Date & Time Taken: 07/19/91 1046
On Site Data: Marathon Indian Basin
Other:
Sample from water transported from Sante Fe

Lab Sample Number: 191619 **Received:** 07/23/91 **Client:** SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Acrolein	ND(100)	ug/l	1135	08/03/91	EPA Method 8240	PM
Acrylonitrile	ND(100)	ug/l	1135	08/03/91	EPA Method 8240	PM
Benzene	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Bromoform	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Bromomethane	ND(10)	ug/l	1135	08/03/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Chlorobenzene	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Chloroethane	ND(10)	ug/l	1135	08/03/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10)	ug/l	1135	08/03/91	EPA Method 8240	PM
Chloroform	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Chloromethane	ND(10)	ug/l	1135	08/03/91	EPA Method 8240	PM
Dibromochloromethane	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Bromodichloromethane	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM

Continued

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Analytical Chemistry • Utility Operations

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
1,1-Dichloroethene	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Dichlorodiflouromethane	ND(1.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
1,2-Dichloropropane	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Ethyl benzene	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Methylene Chloride	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
1,1,2,2-Tetrachloroethane	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Tetrachloroethene	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Toluene	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
1,1,1-Trichloroethane	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Trichloroethene	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Trichlorofluoromethane	ND(10)	ug/l	1135	08/03/91	EPA Method 8240	PM
Vinyl Chloride	ND(10)	ug/l	1135	08/03/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(5.0)	ug/l	1135	08/03/91	EPA Method 8240	PM
Xylenes	ND(10)	ug/l	1135	08/03/91	EPA Method 8240	PM
Benzene	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB
Ethyl benzene	<0.4	ug/l	0800	07/29/91	EPA Method 8020	KB
Toluene	0.7	ug/l	0800	07/29/91	EPA Method 8020	KB
Xylenes	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB

Continued

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Analytical Chemistry • Utility Operations

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY

Reported detection limits are EPA suggested practical quantitation limits. Actual limit may vary with matrix.

Quality Assurance for the SET with Sample 191619

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
				Benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	75		100			0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	116	0800	07/29/91	KB
				Ethyl benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	90		100		111	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	86	0800	07/29/91	KB
				Toluene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	96		100		104	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	93	0800	07/29/91	KB
				Xylenes					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	86		100		115	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	81	0800	07/29/91	KB

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab ANA-LAB Contract No. 191619

OCD Sample No. 9107191046 Field Blank

Collection Date	Collection Time	Collected by—Person/Agency
9/07/19	1046	Ralph Skinner, Marathon, D. Boyer /OCD

SITE INFORMATION

Sample location: Marathon Indian Basin, Field Blank

Collection Site Description: Sample from Water Transported from Santa Fe

Township, Range, Section, Tract: | | | + | | + | + | | |

SEND FINAL REPORT TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLING CONDITIONS

☐ Bailed ☐ Pump
☐ Dipped ☒ Tap

Water level	
Discharge	
Sample type	
pH(00400)	
Conductivity (Uncorrected) μmho	
Water Temp. (00010)	
Conductivity at 25° C μmho	

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1

- ☒ **NF:** Whole sample (Non-filtered)
- ☐ **F:** Filtered in field with 0.45 μ membrane filter
- ☐ **PF:** Pre-filtered w/45 μ membrane filter

- ☒ **NA:** No acid added
- ☐ **A:** HCL
- ☐ **A:** 2ml H_2SO_4/L added
- ☐ **A:** 5ml conc. HNO_3 added
- ☐ **A:** 4ml fuming HNO_3 added

1 ☒ P: $HgCl_2$, Ice

FIELD COMMENTS:

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☐ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☐ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☐ 031	Se	7740
☒ 005	SUITE	8010-8020	☐ 017	SVOC	625	☐ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☐ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☐ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

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2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

09/11/91

Environmental Bureau NM Oil D.
PO Box 2088
Santa Fe, NM 87504

Sample Identification: Borehole 87A (MW 61A)
Collected By: DB
Date & Time Taken: 07/19/91 1055
On Site Data: Marathon Indian Basin
Other:
Bailed-2 1/2 Gallons, No Odor

Lab Sample Number: 191620 **Received:** 07/23/91 Client: SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	220	mg/l as C	1900	08/13/91	EPA Method 310.1	BW
Boron	<.5	mg/l	1700	08/09/91	EPA Method 212.3	MB
Bromide	2	mg/l	1200	07/30/91	ASTM D3869 vol 11.02	ES
Cation-Anion Balance	13.5/13.8	meq/meq	1600	09/10/91		SK
Carbonate	<.5	mg/l	1600	08/14/91	APHA Method 263	BC
Calulated Total Dissolved Solids	850	ppm	1500	09/06/91	APHA Method 1030F	BP2
Specific Conductance	1000 (On Site)	Micromhos	1055	07/19/91	EPA Method 120.1	SB
Fluoride	1.6	mg/l	1400	08/06/91	EPA Method 340.1	BC
Bicarbonate	200	mg/l	1600	08/14/91	APHA Method 263	BC
Sulfate	400	mg/l	1030	08/08/91	EPA Method 375.4	MB
pH	7.0 (On Site)	SU	1055	07/19/91	EPA Method 150.1	SB
Chloride	16	mg/l	1000	08/08/91	EPA Method 325.3	HG
Silver	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Aluminum	1.8	mg/l	1100	07/30/91	EPA Method 6010	GDG
Arsenic	<.005	mg/l	1600	08/14/91	EPA Method 206.2	GK

Continued

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2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Barium	.05	mg/l	1100	07/30/91	EPA Method 6010	GDG
Beryllium	<.01	mg/l	1440	07/30/91	EPA Method 6010	GDG
Dissolved Calcium	160	mg/l	1045	07/26/91	EPA Method 6010	GDG
Cadmium	<.001	mg/l	1300	08/16/91	EPA Method 213.2	GK
Cobolt	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Chromium	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Copper	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Dissolved Iron	<.05	mg/l	1045	07/26/91	EPA Method 6010	GDG
Mercury	<.001	mg/l	1030	08/09/91	EPA Method 245.3	NT
Dissolved Potassium	<2	mg/l	1045	07/26/91	EPA Method 6010	GDG
Dissolved Magnesium	60	mg/l	1045	07/26/91	EPA Method 6010	GDG
Dissolved Manganese	.13	mg/l	1045	07/26/91	EPA Method 6010	GDG
Molybdenum	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Dissolved Sodium	14	mg/l	1045	07/26/91	EPA Method 6010	GDG
Nickel	<.05	mg/l	1220	08/01/91	EPA Method 6010	GDG
Lead	.005	mg/l	1915	08/15/91	EPA Method 239.2	GK
Antimony	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Selenium	<.005	mg/l	2030	08/14/91	EPA Method 270.2	GK
Silicon	18	mg/l	1440	07/30/91	EPA Method 6010	GDG
Thallium	<.2	mg/l	1440	07/30/91	EPA Method 6010	GDG
Vanadium	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG

Continued

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2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Zinc	.03	mg/l	1100	07/30/91	EPA Method 6010	GDG
Acrolein	ND(100)	ug/l	1217	08/03/91	EPA Method 8240	PM
Acrylonitrile	ND(100)	ug/l	1217	08/03/91	EPA Method 8240	PM
Benzene	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Bromoform	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Bromomethane	ND(10)	ug/l	1217	08/03/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Chlorobenzene	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Chloroethane	ND(10)	ug/l	1217	08/03/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10)	ug/l	1217	08/03/91	EPA Method 8240	PM
Chloroform	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Chloromethane	ND(10)	ug/l	1217	08/03/91	EPA Method 8240	PM
Dibromochloromethane	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Bromodichloromethane	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Dichlorodiflouromethane	ND(1.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
1,2-Dichloropropane	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM

Continued

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Analytical Chemistry • Utility Operations

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Ethyl benzene	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Methylene Chloride	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
1,1,2,2-Tetrachloroethane	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Tetrachloroethene	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Toluene	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
1,1,1-Trichloroethane	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Trichloroethene	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Trichlorofluoromethane	ND(10)	ug/l	1217	08/03/91	EPA Method 8240	PM
Vinyl Chloride	ND(10)	ug/l	1217	08/03/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(5.0)	ug/l	1217	08/03/91	EPA Method 8240	PM
Xylenes	ND(10)	ug/l	1217	08/03/91	EPA Method 8240	PM
Benzene	2.0	ug/l	0800	07/29/91	EPA Method 8020	KB
Ethyl benzene	0.4	ug/l	0800	07/29/91	EPA Method 8020	KB
Toluene	1.5	ug/l	0800	07/29/91	EPA Method 8020	KB
Xylenes	0.5	ug/l	0800	07/29/91	EPA Method 8020	KB

Reported detection limits are EPA suggested practical quantitation limits. Actual limit may vary with matrix.

Quality Assurance for the SET with Sample 191620

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
Alkalinity									
	Standard	2420	mg/l as C	2358		103	1900	08/13/91	BW
191618	Duplicate	300	mg/l as C	300		100	1900	08/13/91	BW
191618	Spike		mg/l as C			100	1900	08/13/91	BW
Boron									

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 191620

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	.000	mg/l				1700	08/09/91	MB
	Standard	.51	mg/l	.50		102	1700	08/09/91	MB
191621	Duplicate	<.5	mg/l	<.5		100	1700	08/09/91	MB
				Bromide					
	Standard	100	mg/l	100		100	1200	07/30/91	ES
190679	Duplicate	3	mg/l	3		100	1200	07/30/91	ES
				Fluoride					
	Standard	5.0	mg/l	5.0		100	1400	08/06/91	BC
191618	Duplicate	<1	mg/l	<1		100	1400	08/06/91	BC
				Sulfate					
	Standard	98	mg/l	100		102	1030	08/08/91	MB
191239	Duplicate	10	mg/l	9		111	1030	08/08/91	MB
192196	Duplicate	130	mg/l	130		100	1030	08/08/91	MB
192196	Spike		mg/l		100	99	1030	08/08/91	MB
				Silver					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	.20	mg/l	.20		100	1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	2.0	mg/l	2.0		100	1100	07/30/91	GDG
191930	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		1.0	82	1100	07/30/91	GDG
191620	Spike		mg/l		1.0	81	1100	07/30/91	GDG
				Aluminum					
	Blank	<.05	mg/l				1100	07/30/91	GDG
	Blank	<.05	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1100	07/30/91	GDG
	Standard	9.8	mg/l	10		102	1100	07/30/91	GDG
191930	Duplicate	.59	mg/l	.61		103	1100	07/30/91	GDG
191618	Duplicate	1.4	mg/l	1.4		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	105	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1100	07/30/91	GDG
				Arsenic					
	Blank	<.005	mg/l				1600	08/14/91	GK
	Standard	.099	mg/l	.100		101	1600	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
192240	Spike		mg/l		.100	91	1600	08/14/91	GK
				Barium					
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG

ANA-LAB CORP.
THE COMPLETE SERVICE LAB

2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551 — FAX 903/984-5914

Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 191620

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	5.1	mg/l	5.0		102	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	.03	mg/l	.03		100	1100	07/30/91	GDG
191618	Duplicate	.15	mg/l	.15		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	101	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	101	1100	07/30/91	GDG
				Beryllium					
	Blank	<.01	mg/l				1440	07/30/91	GDG
	Standard	.41	mg/l	.40		102	1440	07/30/91	GDG
	Standard	2.0	mg/l	2.0		100	1440	07/30/91	GDG
191618	Duplicate	<.01	mg/l	<.01		100	1440	07/30/91	GDG
191620	Spike		mg/l		1.6	96	1440	07/30/91	GDG
				Dissolved Calcium					
	Blank	<.05	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	53	mg/l	50		106	1045	07/26/91	GDG
191620	Duplicate	160	mg/l	160		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	98	1045	07/26/91	GDG
				Cadmium					
	Blank	<.001	mg/l				1300	08/16/91	GK
	Standard	.002	mg/l	.002		100	1300	08/16/91	GK
191621	Duplicate	<.001	mg/l	<.001		100	1300	08/16/91	GK
				Cobolt					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1440	07/30/91	GDG
				Chromium					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.2	mg/l	5.0		104	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	<.05	mg/l	<.05		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	104	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	103	1100	07/30/91	GDG
				Copper					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1100	07/30/91	GDG
	Standard	9.8	mg/l	10		102	1100	07/30/91	GDG

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 191620

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
191930	Duplicate	.02	mg/l	.02		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	100	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	98	1100	07/30/91	GDG
				Dissolved Iron					
	Blank	<.05	mg/l				1045	07/26/91	GDG
	Standard	.93	mg/l	1.0		107	1045	07/26/91	GDG
	Standard	5.2	mg/l	5.0		104	1045	07/26/91	GDG
191620	Duplicate	<.05	mg/l	<.05		100	1045	07/26/91	GDG
191622	Spike		mg/l		2.0	103	1045	07/26/91	GDG
				Mercury					
	Blank	.002	mg/l				1030	08/09/91	NT
	Blank	<.05	mg/kg				1030	08/09/91	NT
	Standard	.010	mg/l	.010		100	1030	08/09/91	NT
191624	Duplicate	<.001	mg/l	<.001		100	1030	08/09/91	NT
192380	Duplicate	.52	mg/kg	.50		104	1030	08/09/91	NT
191624	Spike		mg/l		.010	98	1030	08/09/91	NT
192380	Spike		mg/kg		.010	117	1030	08/09/91	NT
				Dissolved Potassium					
	Blank	<2	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	48	mg/l	50		104	1045	07/26/91	GDG
191620	Duplicate	<2	mg/l	<2		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	117	1045	07/26/91	GDG
				Dissolved Magnesium					
	Blank	<.01	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	49	mg/l	50		102	1045	07/26/91	GDG
191620	Duplicate	60	mg/l	60		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	97	1045	07/26/91	GDG
				Dissolved Manganese					
	Blank	<.01	mg/l				1045	07/26/91	GDG
	Standard	1.0	mg/l	1.0		100	1045	07/26/91	GDG
	Standard	5.2	mg/l	5.0		104	1045	07/26/91	GDG
191620	Duplicate	.13	mg/l	.13		100	1045	07/26/91	GDG
191622	Spike		mg/l		2.0	105	1045	07/26/91	GDG
				Molybdenum					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1440	07/30/91	GDG
	Standard	10	mg/l	10		100	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		2.0	100	1440	07/30/91	GDG
				Dissolved Sodium					
	Blank	<1	mg/l				1045	07/26/91	GDG

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 191620

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	9.8	mg/l	10		102	1045	07/26/91	GDG
	Standard	49	mg/l	50		102	1045	07/26/91	GDG
191620	Duplicate	13	mg/l	14		107	1045	07/26/91	GDG
191622	Spike		mg/l		18	82	1045	07/26/91	GDG
				Nickel					
	Blank	<.05	mg/l				1220	08/01/91	GDG
	Blank	<.05	mg/l				1220	08/01/91	GDG
	Standard	.78	mg/l	.80		103	1220	08/01/91	GDG
	Standard	1.1	mg/l	1.0		110	1220	08/01/91	GDG
	Standard	5.3	mg/l	5.0		106	1220	08/01/91	GDG
191930	Duplicate	<.05	mg/l	<.05		100	1220	08/01/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1220	08/01/91	GDG
191933	Spike		mg/l		4.0	100	1220	08/01/91	GDG
191620	Spike		mg/l		4.0	101	1220	08/01/91	GDG
				Lead					
	Blank	.002	mg/l				1915	08/15/91	GK
	Blank	<.001	mg/l				1915	08/15/91	GK
	Standard	.028	mg/l	.025		111	1915	08/15/91	GK
	Standard	.027	mg/l	.025		108	1915	08/15/91	GK
	Standard	.048	mg/l	.050		104	1915	08/15/91	GK
	Standard	.051	mg/l	.050		102	1915	08/15/91	GK
191621	Duplicate	.004	mg/l	.005		122	1915	08/15/91	GK
193075	Duplicate	.002	mg/l	.001		167	1915	08/15/91	GK
191621	Spike		mg/l		.020	100	1915	08/15/91	GK
193075	Spike		mg/l		.020	76	1915	08/15/91	GK
				Antimony					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1440	07/30/91	GDG
				Selenium					
	Blank	<.005	mg/l				2030	08/14/91	GK
	Standard	.097	mg/l	.100		103	2030	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
192237	Spike		mg/l		.100	108	2030	08/14/91	GK
				Silicon					
	Blank	<.1	mg/l				1440	07/30/91	GDG
	Standard	5.2	mg/l	5.0		104	1440	07/30/91	GDG
	Standard	9.7	mg/l	10		103	1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
191618	Duplicate	20	mg/l	19		105	1440	07/30/91	GDG
191620	Spike		mg/l		2.0	100	1440	07/30/91	GDG
				Thallium					

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 191620

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	<.2	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.2	mg/l	<.2		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	95	1440	07/30/91	GDG
				Vanadium					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		6.0	100	1440	07/30/91	GDG
				Zinc					
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.3	mg/l	5.0		106	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	.05	mg/l	.06		118	1100	07/30/91	GDG
191618	Duplicate	.03	mg/l	.04		129	1100	07/30/91	GDG
191933	Spike		mg/l		2.0	99	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	99	1100	07/30/91	GDG
				Benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	75		100			0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	116	0800	07/29/91	KB
				Ethyl benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	90		100		111	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	86	0800	07/29/91	KB
				Toluene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	96		100		104	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	93	0800	07/29/91	KB
				Xylenes					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	86		100		115	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	81	0800	07/29/91	KB

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab ANA-LAB Contract No. 191620

OCD Sample No. 910719 1055

Collection Date	Collection Time	Collected by—Person/Agency
91/07/19	1055	R. Skinner, Marathon; D. Boyer /OCD

SITE INFORMATION

Sample location: Marathon Indian Basin, Borehole 87A (MW 61A)

Collection Site Description:

Township, Range, Section, Tract: | | | + | | + | + | | |

SEND FINAL REPORT TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLING CONDITIONS

- ☒ Bailed ☐ Pump ☐ Dipped ☐ Tap
- Water level: —
- Discharge: —
- Sample type: Grab
- pH(00400): 7 (STRIP)
- Conductivity (Uncorrected): 1000 µmho
- Water Temp. (00010): 22C
- Conductivity at 25° C: µmho

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 3

3 ☒ **NF:** Whole sample (Non-filtered)
☐ **F:** Filtered in field with 0.45 µ membrane filter
☐ **PF:** Pre-filtered w/45 µ membrane filter

2 ☒ **NA:** No acid added
☐ **A:** HCL
☐ **A:** 2ml H_2SO_4/L added
☒ **A:** 5ml conc. HNO_3 added
☐ **A:** 4ml fuming HNO_3 added
1 ☒ $HgCl_2$, Ice

FIELD COMMENTS:

Bailed ~ 2½ Gallons, No ODOR

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☐ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☒ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☒ 031	Se	7740
☒ 005	SUITE	8010-8020	☐ 017	SVOC	625	☒ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☒ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☐ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☒ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	

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Analytical Chemistry • Utility Operations

09/11/91

Environmental Bureau NM Oil D.
PO Box 2088
Santa Fe, NM 87504

Sample Identification: Borehole 86 (MW 60)
Collected By: DB
Date & Time Taken: 07/19/91 1252
On Site Data: Marathon Indian Basin
Other:
Bailed- 2 1/2 Gallons, No Odor

Lab Sample Number: 191621 **Received:** 07/23/91 Client: SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Sep. Liquid-Liquid Extraction	700->1	ml->ml	1200	08/07/89	EPA Method 3520	LW
Alkalinity	240	mg/l as C	1900	08/13/91	EPA Method 310.1	BW
Boron	<.5	mg/l	1700	08/09/91	EPA Method 212.3	MB
Bromide	5	mg/l	1200	07/30/91	ASTM D3869 vol 11.02	ES
Cation-Anion Balance	13.4/13.9	meq/meq	1600	09/10/91		SK
Carbonate	<.5	mg/l	1600	08/14/91	APHA Method 263	BC
Calulated Total Dissolved Solids	860	ppm	1500	09/06/91	APHA Method 1030F	BP2
Specific Conductance	980 (On Site)	Micromhos	1252	07/19/91	EPA Method 120.1	SB
Fluoride	2.0	mg/l	1400	08/06/91	EPA Method 340.1	BC
Bicarbonate	210	mg/l	1600	08/14/91	APHA Method 263	BC
Sulfate	400	mg/l	1030	08/08/91	EPA Method 375.4	MB
pH	7.0 (On Site)	SU	1252	07/19/91	EPA Method 150.1	SB
Chloride	13	mg/l	1400	08/08/91	EPA Method 325.3	HG
Silver	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Aluminum	.51	mg/l	1100	07/30/91	EPA Method 6010	GDG

Continued

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Analytical Chemistry • Utility Operations

191621 Continued

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Arsenic	<.005	mg/l	1600	08/14/91	EPA Method 206.2	GK
Barium	.04	mg/l	1100	07/30/91	EPA Method 6010	GDG
Beryllium	<.01	mg/l	1440	07/30/91	EPA Method 6010	GDG
Dissolved Calcium	160	mg/l	1045	07/26/91	EPA Method 6010	GDG
Cadmium	<.001	mg/l	1300	08/16/91	EPA Method 213.2	GK
Cobolt	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Chromium	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Copper	<.02	mg/l	1100	07/30/91	EPA Method 6010	GDG
Dissolved Iron	<.05	mg/l	1045	07/26/91	EPA Method 6010	GDG
Mercury	<.001	mg/l	1030	08/09/91	EPA Method 245.3	NT
Dissolved Potassium	<2	mg/l	1045	07/26/91	EPA Method 6010	GDG
Dissolved Magnesium	60	mg/l	1045	07/26/91	EPA Method 6010	GDG
Dissolved Manganese	.05	mg/l	1045	07/26/91	EPA Method 6010	GDG
Molybdenum	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Dissolved Sodium	12	mg/l	1045	07/26/91	EPA Method 6010	GDG
Nickel	<.05	mg/l	1220	08/01/91	EPA Method 6010	GDG
Lead	.004	mg/l	1915	08/15/91	EPA Method 239.2	GK
Antimony	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Selenium	<.005	mg/l	2030	08/14/91	EPA Method 270.2	GK
Silicon	9.5	mg/l	1440	07/30/91	EPA Method 6010	GDG
Thallium	<.2	mg/l	1440	07/30/91	EPA Method 6010	GDG

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191621 Continued

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Vanadium	<.05	mg/l	1440	07/30/91	EPA Method 6010	GDG
Zinc	.04	mg/l	1100	07/30/91	EPA Method 6010	GDG
Acenaphthene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Acenaphthylene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Acrolein	ND(100)	ug/l	1300	08/03/91	EPA Method 8240	PM
Acrylonitrile	ND(100)	ug/l	1300	08/03/91	EPA Method 8240	PM
Aldrin	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Anthracene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Benzene	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Benzidine	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Benzo(a)anthracene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Benzo(a)pyrene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Benzo(b)fluoranthene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Benzo(ghi)perylene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Benzo(k)fluoranthene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Alpha-BHC	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Beta-BHC	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Gamma-BHC	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Delta-BHC	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Bis(2-chloroethyl)ether	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Bis(2-chloroethoxy)methane	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Bis(2-chloroisopropyl)ether	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
4-Bromophenyl phenyl ether	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Bis(2-ethylhexyl)phthalate	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Bromoform	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Bromomethane	ND(10)	ug/l	1300	08/03/91	EPA Method 8240	PM
4-Chlorophenyl phenyl ether	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Benzyl butyl phthalate	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Carbon Tetrachloride	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Chlordane	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
4-Chloro-3-methylphenol	ND(29)	ug/l	1454	08/16/91	EPA Method 8270	PM
Chlorobenzene	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Chloroethane	ND(10)	ug/l	1300	08/03/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10)	ug/l	1300	08/03/91	EPA Method 8240	PM
Chloroform	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Chloromethane	ND(10)	ug/l	1300	08/03/91	EPA Method 8240	PM
2-Chloronaphthalene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
2-Chlorophenol	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Chrysene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
4,4'-DDD	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
4,4'-DDE	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
4,4'-DDT	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Dibenzo(a,h)anthracene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Dibromochloromethane	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
1,3-Dichlorobenzene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
1,2-Dichlorobenzene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
1,4-Dichlorobenzene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
3,3'-Dichlorobenzidine	ND(29)	ug/l	1454	08/16/91	EPA Method 8270	PM
Bromodichloromethane	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
2,4-Dichlorophenol	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Dichlorodiflouromethane	ND(1.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
1,2-Dichloropropane	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Dieldrin	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Diethyl phthalate	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
2,4-Dimethylphenol	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Dimethyl phthalate	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Di-n-butylphthalate	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Di-n-octylphthalate	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
2-Methyl-4,6-dinitrophenol	ND(71)	ug/l	1454	08/16/91	EPA Method 8270	PM
2,4-Dinitrophenol	ND(71)	ug/l	1454	08/16/91	EPA Method 8270	PM
2,4-Dinitrotoluene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
2,6-Dinitrotoluene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
1,2-Diphenyl Hydrazine	ND(14)	ug/l	1454	08/16/91	(as azobenzene)	PM
Endosulfan I	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Endosulfan II	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Endosulfan sulfate	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Endrin	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Endrin aldehyde	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Ethyl benzene	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Fluoranthene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Fluorene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Heptachlor	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Heptachlor epoxide	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Hexachlorobenzene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Hexachlorobutadiene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Hexachlorocyclopentadiene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Hexachloroethane	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Indeno(1,2,3-cd)pyrene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Isophorone	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Methylene Chloride	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Naphthalene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Nitrobenzene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
2-Nitrophenol	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
4-Nitrophenol	ND(71)	ug/l	1454	08/16/91	EPA Method 8270	PM
N-nitrosodimethylamine	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
N-Nitrosodi-n-propylamine	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
N-nitrosodiphenylamine	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
PCB-1016	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
PCB-1221	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
PCB-1232	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
PCB-1242	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
PCB-1248	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
PCB-1254	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
PCB-1260	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Pentachlorophenol	ND(71)	ug/l	1454	08/16/91	EPA Method 8270	PM
Phenanthrene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Phenol	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Pyrene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
1,1,2,2-Tetrachloroethane	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Tetrachloroethene	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Toluene	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Toxaphene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
1,2,4-Trichlorobenzene	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
1,1,1-Trichloroethane	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Trichloroethene	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Trichlorofluoromethane	ND(10)	ug/l	1300	08/03/91	EPA Method 8240	PM
2,4,6-Trichlorophenol	ND(14)	ug/l	1454	08/16/91	EPA Method 8270	PM
Vinyl Chloride	ND(10)	ug/l	1300	08/03/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(5.0)	ug/l	1300	08/03/91	EPA Method 8240	PM
Xylenes	ND(10)	ug/l	1300	08/03/91	EPA Method 8240	PM
Benzene	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB
Ethyl benzene	<0.4	ug/l	0800	07/29/91	EPA Method 8020	KB
Toluene	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB
Xylenes	<0.2	ug/l	0800	07/29/91	EPA Method 8020	KB

Reported detection limits are EPA suggested practical quantitation limits. Actual limit may vary with matrix.

Quality Assurance for the SET with Sample 191621

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
				Alkalinity					
	Standard	2420	mg/l as C	2358		103	1900	08/13/91	BW
191618	Duplicate	300	mg/l as C	300		100	1900	08/13/91	BW
191618	Spike		mg/l as C			100	1900	08/13/91	BW
				Boron					
	Blank	.000	mg/l				1700	08/09/91	MB

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Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	.51	mg/l	.50		102	1700	08/09/91	MB
191621	Duplicate	<.5	mg/l	<.5		100	1700	08/09/91	MB
				Bromide					
	Standard	100	mg/l	100		100	1200	07/30/91	ES
190679	Duplicate	3	mg/l	3		100	1200	07/30/91	ES
				Fluoride					
	Standard	5.0	mg/l	5.0		100	1400	08/06/91	BC
191618	Duplicate	<1	mg/l	<1		100	1400	08/06/91	BC
				Sulfate					
	Standard	98	mg/l	100		102	1030	08/08/91	MB
191239	Duplicate	10	mg/l	9		111	1030	08/08/91	MB
192196	Duplicate	130	mg/l	130		100	1030	08/08/91	MB
192196	Spike		mg/l		100	99	1030	08/08/91	MB
				Chloride					
	Standard	70	mg/l	71		101	1400	08/08/91	HG
191620	Duplicate	16	mg/l	15		106	1400	08/08/91	HG
				Silver					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	.20	mg/l	.20		100	1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	2.0	mg/l	2.0		100	1100	07/30/91	GDG
191930	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		1.0	82	1100	07/30/91	GDG
191620	Spike		mg/l		1.0	81	1100	07/30/91	GDG
				Aluminum					
	Blank	<.05	mg/l				1100	07/30/91	GDG
	Blank	<.05	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1100	07/30/91	GDG
	Standard	9.8	mg/l	10		102	1100	07/30/91	GDG
191930	Duplicate	.59	mg/l	.61		103	1100	07/30/91	GDG
191618	Duplicate	1.4	mg/l	1.4		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	105	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1100	07/30/91	GDG
				Arsenic					
	Blank	<.005	mg/l				1600	08/14/91	GK
	Standard	.099	mg/l	.100		101	1600	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	1600	08/14/91	GK
192240	Spike		mg/l		.100	91	1600	08/14/91	GK
				Barium					
	Blank	<.01	mg/l				1100	07/30/91	GDG

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Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	.03	mg/l	.03		100	1100	07/30/91	GDG
191618	Duplicate	.15	mg/l	.15		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	101	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	101	1100	07/30/91	GDG
				Beryllium					
	Blank	<.01	mg/l				1440	07/30/91	GDG
	Standard	.41	mg/l	.40		102	1440	07/30/91	GDG
	Standard	2.0	mg/l	2.0		100	1440	07/30/91	GDG
191618	Duplicate	<.01	mg/l	<.01		100	1440	07/30/91	GDG
191620	Spike		mg/l		1.6	96	1440	07/30/91	GDG
				Dissolved Calcium					
	Blank	<.05	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	53	mg/l	50		106	1045	07/26/91	GDG
191620	Duplicate	160	mg/l	160		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	98	1045	07/26/91	GDG
				Cadmium					
	Blank	<.001	mg/l				1300	08/16/91	GK
	Standard	.002	mg/l	.002		100	1300	08/16/91	GK
191621	Duplicate	<.001	mg/l	<.001		100	1300	08/16/91	GK
				Cobolt					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1440	07/30/91	GDG
				Chromium					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.2	mg/l	5.0		104	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	<.05	mg/l	<.05		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	104	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	103	1100	07/30/91	GDG
				Copper					
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Blank	<.02	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG

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Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	5.0	mg/l	5.0		100	1100	07/30/91	GDG
	Standard	9.8	mg/l	10		102	1100	07/30/91	GDG
191930	Duplicate	.02	mg/l	.02		100	1100	07/30/91	GDG
191618	Duplicate	<.02	mg/l	<.02		100	1100	07/30/91	GDG
191933	Spike		mg/l		4.0	100	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	98	1100	07/30/91	GDG
				Dissolved Iron					
	Blank	<.05	mg/l				1045	07/26/91	GDG
	Standard	.93	mg/l	1.0		107	1045	07/26/91	GDG
	Standard	5.2	mg/l	5.0		104	1045	07/26/91	GDG
191620	Duplicate	<.05	mg/l	<.05		100	1045	07/26/91	GDG
191622	Spike		mg/l		2.0	103	1045	07/26/91	GDG
				Mercury					
	Blank	.002	mg/l				1030	08/09/91	NT
	Blank	<.05	mg/kg				1030	08/09/91	NT
	Standard	.010	mg/l	.010		100	1030	08/09/91	NT
191624	Duplicate	<.001	mg/l	<.001		100	1030	08/09/91	NT
192380	Duplicate	.52	mg/kg	.50		104	1030	08/09/91	NT
191624	Spike		mg/l		.010	98	1030	08/09/91	NT
192380	Spike		mg/kg		.010	117	1030	08/09/91	NT
				Dissolved Potassium					
	Blank	<2	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	48	mg/l	50		104	1045	07/26/91	GDG
191620	Duplicate	<2	mg/l	<2		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	117	1045	07/26/91	GDG
				Dissolved Magnesium					
	Blank	<.01	mg/l				1045	07/26/91	GDG
	Standard	10	mg/l	10		100	1045	07/26/91	GDG
	Standard	49	mg/l	50		102	1045	07/26/91	GDG
191620	Duplicate	60	mg/l	60		100	1045	07/26/91	GDG
191622	Spike		mg/l		18	97	1045	07/26/91	GDG
				Dissolved Manganese					
	Blank	<.01	mg/l				1045	07/26/91	GDG
	Standard	1.0	mg/l	1.0		100	1045	07/26/91	GDG
	Standard	5.2	mg/l	5.0		104	1045	07/26/91	GDG
191620	Duplicate	.13	mg/l	.13		100	1045	07/26/91	GDG
191622	Spike		mg/l		2.0	105	1045	07/26/91	GDG
				Molybdenum					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	5.0	mg/l	5.0		100	1440	07/30/91	GDG
	Standard	10	mg/l	10		100	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		2.0	100	1440	07/30/91	GDG
				Dissolved Sodium					

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 191621

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Blank	<1	mg/l				1045	07/26/91	GDG
	Standard	9.8	mg/l	10		102	1045	07/26/91	GDG
	Standard	49	mg/l	50		102	1045	07/26/91	GDG
191620	Duplicate	13	mg/l	14		107	1045	07/26/91	GDG
191622	Spike		mg/l		18	82	1045	07/26/91	GDG
				Nickel					
	Blank	<.05	mg/l				1220	08/01/91	GDG
	Blank	<.05	mg/l				1220	08/01/91	GDG
	Standard	.78	mg/l	.80		103	1220	08/01/91	GDG
	Standard	1.1	mg/l	1.0		110	1220	08/01/91	GDG
	Standard	5.3	mg/l	5.0		106	1220	08/01/91	GDG
191930	Duplicate	<.05	mg/l	<.05		100	1220	08/01/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1220	08/01/91	GDG
191933	Spike		mg/l		4.0	100	1220	08/01/91	GDG
191620	Spike		mg/l		4.0	101	1220	08/01/91	GDG
				Lead					
	Blank	.002	mg/l				1915	08/15/91	GK
	Blank	<.001	mg/l				1915	08/15/91	GK
	Standard	.028	mg/l	.025		111	1915	08/15/91	GK
	Standard	.027	mg/l	.025		108	1915	08/15/91	GK
	Standard	.048	mg/l	.050		104	1915	08/15/91	GK
	Standard	.051	mg/l	.050		102	1915	08/15/91	GK
191621	Duplicate	.004	mg/l	.005		122	1915	08/15/91	GK
193075	Duplicate	.002	mg/l	.001		167	1915	08/15/91	GK
191621	Spike		mg/l		.020	100	1915	08/15/91	GK
193075	Spike		mg/l		.020	76	1915	08/15/91	GK
				Antimony					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	97	1440	07/30/91	GDG
				Selenium					
	Blank	<.005	mg/l				2030	08/14/91	GK
	Standard	.097	mg/l	.100		103	2030	08/14/91	GK
191618	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
191622	Duplicate	<.005	mg/l	<.005		100	2030	08/14/91	GK
192237	Spike		mg/l		.100	108	2030	08/14/91	GK
				Silicon					
	Blank	<.1	mg/l				1440	07/30/91	GDG
	Standard	5.2	mg/l	5.0		104	1440	07/30/91	GDG
	Standard	9.7	mg/l	10		103	1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
191618	Duplicate	20	mg/l	19		105	1440	07/30/91	GDG

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Analytical Chemistry • Utility Operations

Quality Assurance for the SET with Sample 191621

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
191620	Spike		mg/l		2.0	100	1440	07/30/91	GDG
				Thallium					
	Blank	<.2	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.2	mg/l	<.2		100	1440	07/30/91	GDG
191620	Spike		mg/l		4.0	95	1440	07/30/91	GDG
				Vanadium					
	Blank	<.05	mg/l				1440	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1440	07/30/91	GDG
	Standard	5.1	mg/l	5.0		102	1440	07/30/91	GDG
191618	Duplicate	<.05	mg/l	<.05		100	1440	07/30/91	GDG
191620	Spike		mg/l		6.0	100	1440	07/30/91	GDG
				Zinc					
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Blank	<.01	mg/l				1100	07/30/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	07/30/91	GDG
	Standard	5.3	mg/l	5.0		106	1100	07/30/91	GDG
	Standard	10	mg/l	10		100	1100	07/30/91	GDG
191930	Duplicate	.05	mg/l	.06		118	1100	07/30/91	GDG
191618	Duplicate	.03	mg/l	.04		129	1100	07/30/91	GDG
191933	Spike		mg/l		2.0	99	1100	07/30/91	GDG
191620	Spike		mg/l		4.0	99	1100	07/30/91	GDG
				Benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	75		100			0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	116	0800	07/29/91	KB
				Ethyl benzene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	90		100		111	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	86	0800	07/29/91	KB
				Toluene					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	96		100		104	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	93	0800	07/29/91	KB
				Xylenes					
	Blank	<5.0	ug/l				0800	07/29/91	KB
	Standard	86		100		115	0800	07/29/91	KB
191938	Duplicate	<5.0	ug/kg	<5.0		100	0800	07/29/91	KB
191938	Spike				100	81	0800	07/29/91	KB

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Quality Assurance for the SET with Sample 191621

DECAFLUOROTRIPHENYLPHOSPHINE

Ion Abundance Criteria

m/z	Min %	Max %	Mass	Actual	Status
51	30.0	60.0	198	45.4	PASS
68	---	2.0	69	1.2	PASS
69	---	---	---	0.0	PASS
70	---	2.0	69	1.2	PASS
127	40.0	60.0	198	53.2	PASS
197	---	1.0	198	0.5	PASS
198	100.0	---	---	100.0	PASS
199	5.0	9.0	198	6.7	PASS
275	10.0	30.0	198	12.5	PASS
365	1.0	---	198	1.8	PASS
441	---	100.0	443	96.7	PASS
442	40.0	---	198	54.9	PASS
443	17.0	23.0	442	21.3	PASS

SPIKE

Compound Name	Concent.	Sample	Recovery
1,4-Dichlorobenzene	100	78	78%
N-Nitrosodi-n-propyl	100	98	98%
1,2,4-Trichlorobenze	100	112	112%
2,4-Dinitrotoluene	100	135	135%
Di-n-butylphthalate	100	87	87%
Pyrene	100	65	65%
Phenol	100	112	112%
2-Chlorophenol	100	132	132%
4-Chloro-3-methylphe	100	105	105%
4-Nitrophenol	100	94	94%
Pentachlorophenol	100	97	97%

SPIKE

Compound Name	Recovery
Lindane	118%
Endrin	98%
Methoxychlor	110%

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

ANALYSIS REQUEST FORM

Contract Lab ANA-LAB Contract No. 191621

OCD Sample No. 910719 1252

Collection Date	Collection Time	Collected by—Person/Agency
9/07/19	1252	Ralph SKINNER / Marathon, A. Boyer /OCD

SITE INFORMATION

Sample location: Marathon Indian Basin Borehole 86 (MW60)

Collection Site Description:

Township, Range, Section, Tract: | | | + | | + | + | | |

SEND FINAL REPORT TO

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

SAMPLING CONDITIONS

- ☒ Bailed ☐ Pump ☐ Dipped ☐ Tap
- Water level: ✓
- Discharge: ✓
- Sample type: Grab
- pH(00400): 7
- Conductivity (Uncorrected): 180 µmho
- Water Temp. (00010): 21 °C
- Conductivity at 25° C: µmho

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 4

4 ☒ **NF:** Whole sample (Non-filtered)
☐ **F:** Filtered in field with 0.45 µ membrane filter
☐ **PF:** Pre-filtered w/45 µ membrane filter

3 ☒ **NA:** No acid added
☐ **A:** HCL
☐ **A:** 2ml H_2SO_4/L added
1 ☒ **A:** 5ml conc. HNO_3 added
☐ **A:** 4ml fuming HNO_3 added
1 ☒ PHgCl, Ice

FIELD COMMENTS: 1 ☒ Hex, Ice

Bailed ~ 2½ Gallons, No Odor

LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
☐ 001	VOA	8020	☐ 013	PHENOL	604	☐ 026	Cd	7130
☐ 002	VOA	602	☐ 014	VOC	8240	☐ 027	Pb	7421
☐ 003	VOH	8010	☐ 015	VOC	624	☒ 028	Hg(L)	7470
☐ 004	VOH	601	☐ 016	SVOC	8250	☒ 031	Se	7740
☒ 005	SUITE	8010-8020	☐ 017	SVOC	625	☒ 032	ICAP	6010
☐ 006	SUITE	601-602	☐ 018	VOC	8260	☒ 033	CATIONS/ANIONS	
☐ 007	HEADSPACE		☐ 019	SVOC	8270	☐ 034	N SUITE	
☒ 008	PAH	8100	☐ 020	O&G	9070	☐ 035	NITRATE	
☐ 009	PAH	610	☒ 022	AS	7060	☐ 036	NITRITE	
☐ 010	PCB	8080	☐ 023	Ba	7080	☐ 037	AMMONIA	
☐ 011	PCB	608	☐ 024	Cr	7190	☐ 038	TKN	
☐ 012	PHENOL	8040	☐ 025	Cr6	7198	☐	OTHER	