

PERFACE

“ONRC Action, 286 F.3d at 1444. As stated by The SUPREME Court:

[L]egislative history indicates an intent to strike a balance between encouraging Citizen enforcement of Environmental Regulations and avoiding burdening the Federal Courts with excessive numbers of Citizens suits. Requiring Citizens to comply with the Notice delay requirements serve the congressional goal in two ways. First, notice allows Governments agencies to take responsibility for enforcing Environmental Regulations, thus obviating the need for Citizens suite. [S]econd. Notice gives the alleged violator “an opportunity to bring itself into complete compliance with the Act and this likewise render unnecessary a citizen suit.”

[S]hall include sufficient information to permit the recipient to identify the specific standard, limitation, or order alleged to have been violated, the activity alleged to constitute, the person or persons responsible for the alleged violation, the location of the alleged violation, and the full name, address, and telephone number of the person giving notice.

California Sporting Protection Alliance v. City of West Sacramento. 905 F. Supp. 792, 799 (E.D. Cal.1995)

Statement of Facts!

- 1 MISTER CURTIS HAS CANCER, HODGKIN'S STAGE 4***
- 2 DIOXIN IS ONE OF THE MOST TOXIC AND ENVIRONMENTALLY STABLE TRICYCLIC AROMATIC COMPOUND OF ITS STRUCTURAL CLASS.***
- 3 PEOPLE HAVE DIED FROM CANCER IN THE OUR NEIGHBOR.***
- 4 THE WATER IN BULLHEAD CITY ARIZONA IS CONTAMINATED WITH HIGH LEVELS OF NIRATRES AND PERCHOLRATE, AND NUMERIOUS MAN MADE CHEMICALS, INCLUDING PHRAMACAUTICALS.***
- 5 THE CONTAMINATED WATER REACHES ALL THE WAY TO THE MEXICAN BOARDER.***
- 6 BULLHEAD CITY ARIZONA IS IN VIOLATION OF A COURT ORDER, CV -97-09626***
- 7 BULLHEAD CITY HAS FINES TOTALING MORE THAN \$500,000.00 DOLLARS. FROM AS FAR BACK AS 2001 WITH A DAILY FINE UP TO \$3,000.00 DOLLARS A DAY. SEE EXHIBIY BULLHEAD CITY INFO.***

8 BULLHEAD CITY IS IN VIOLATION OF TITLE 18 OF ARIZONA ADMINISTRATIVE CODE (AAC) FOR THE DISCHARGE OF EFFULENT FOR THE PERPOSE OF IRRIGATION.

9 BULLHEAD CITY HAS NOT CONSTRUCTED THE PROPER SEWER FACILITIES FOR THE MOST CONTAMINATED PART OF TOWN, FROM SILVERCREEK TO K-MART PARKING LOT SOUTH, BORDER BY HIGHWAY 95 TO THE PARKWAY WEST. SEE EXHIBITS ATTACHMENT "B"

BULLHEAD CITY CHIEF ENGINEER SAID THAT THE CITY DOES NOT CARE ABOUT THE CONSENT DECREE WE DO WHAT WE WONT. SEE EXHIBIT BULLHEAD CITY INFO

Alan & Linda Curtis
1355 Cherokee Ln.
Bullhead City, Arizona 86442
Ph. (928) 763-5725
E-mail mm1313@citlink.net

July 15, 2003

*Re: the first 60-day notice under 33U.S.C. 1365
(a)(1),(a)(2),(b)(1),(b)(2) of the Clean Water Act:*

To The City Council of Bullhead City Arizona:

*There are two (2) reports issued by the Department of
Environmental Quality of the State of Arizona.*

*One (1), report Dated February 6, 2003. that the drinking water
in The City of Bullhead City, Arizona, has been contaminated
since 1987, and is still contaminated at the present time, July 1,
2003. You already have this report. Request copies from your City
Engineer.*

*A second report, dated December 13, 1999 lists Perchlorate
Levels in the drinking water along the Colorado River, as and the
report clearly states, the data is incomplete. There is NO reported
testing of the Bullhead City area at all from Davis Dam to the
north end of Fort Mohave Arizona. An interesting and significant
omission of testing that's about twenty (20) Miles of the Colorado
River From Katherine landing Bay to the Avi Casino, in fort
Mohave, Arizona.*

*There are more reports on the Perchlorate levels by
Environmental Working Group of Oakland California, 1904
Franklin Street, Suite 703, Oakland, CA. 94612, www.ewg.org.
Plus 4 reports from the Department of Agriculture (USDA). And
about 35 more, reports when Researched, including California's*

DEQ, the U.S. E.P.A., and numerous Private Organizations. All of the reports show the contamination goes all the way to the Mexican boarder.

The State of Arizona has as an on going suit against the City of Bullhead City, for water pollution, CV-97-09626. Where Bullhead City, is the Defendant, not the Citizens of Bullhead City. The suit clearly states what statue Bullhead City, Arizona, is in violation of, and continues to be violating. There is about five(5)to)6) thousand homes and business that are still on septic tanks in Bullhead City.

Bullhead City, AZ. ,as of this date, is In violation of the State of Arizona Administrative Code, Title 18, Chapters 11,9, article 3, 6,7, for Surface Water Quality Standards.

Bullhead City, Arizona, is also in violation of State of Arizona A.R.S.49-202.A;and A.R.S.49-141.3 AND 49-145.5;and 49-223 of the Aquifer Water Quality Standards.

*The violations are in sections,8,9,10,18,and 30, Pertain to the discharging of effluent water with high concentration levels of known pollutants. Like Nitrates, Dioxin, Perchlorate, and numerous Pharmaceutical. **SEE EXHIBIT BACKGROUND ON COMPOUNDS.***

Bullhead City is currently operating in these township, listed above and maybe others, that encompass the Three (3) Million acres Known as Bullhead City Arizona. The A.A.C. code clearly out- lines what water can be used for. After secondary treatment has occurred, and only then can +A, A, B+ ,B ,and CLASS C effluent water be used. The town of Kingman has found out that would be a cost \$3,000.000.00 Million Dollars for every outlet, according to an article in the Arizona Republic, dated June 26, 2003.

*Bullhead City Waste Water Facilities are in violation of a signed agreement with the State of Arizona, governing regenerating water back in to the under ground aquifers. **SEE ATTACHMENT "B"***

Title 18, of the A.A.C., by the State of Arizona ADEQ, clearly states how the Waste Water is to be used, and how to treat the waste water for use in irrigation of any lawns that the public uses, like soccer fields, golf courses, or any other use that the public may come in contact with (as stated in Title R18- Ch.11,301, through 309,and R18-Ch-9 articles 6, and 7, of the reclaimed Water Quality Standards, of August 2001).

*This is a direct and willful act of Public safety, at the highest level. This is putting Money first, and the health and safety of the Public last. **SEE EXHIBITS ON STATE BUDGET NEWSPAPER ARTICLES.***

So therefore you, (Bullhead City), are turning the reclaiming ponds into toxic waste ponds, along with all of the surrounding area down wind, and up wind of the ponds. Just Spraying the waste water up in the air or spraying on the Ground, is not sufficient treatment, due to the facility's close proximity to the Colorado River, about 1300 feet, and is located in the one Hundred(100) year flood plain

The water table on section thirty (30) is so close to the surface, it allows quick assimilation of the contaminated effluent water to enter the under- ground aquifers, which contaminates the water further. This is our only source of drinking water, because of this we do not have any others sources of fresh water, and we do not have any fresh water filtration facilities in the Bullhead City area.

This cross contaminated Water is being used by the two water companies known as (1) Arizona American Water Company, and (2) North Valley Water, operated by McCormick, in the North end of the city, at the Sunridge Area. These two (2) Companies supply

most of the drinking Water to the public. With Arizona –American Water Company being the largest.

*We are concerned because the City of Bullhead City has failed to sewer the original sewer district 2 that they agree on in the Consent Decree back 1997. Six years ago. **SEE EXHIBITS ATTACHMENT”B”**.*

Our water comes from a well in section 29, and if the city has not completely the sewers above section 29 we get all the shit that comes down hill, and if our wells are blended with others the water will never clear up. You are just adding and adding contamination together.

Any first year Chemistry student knows that when you evaporate the water off you end up with the salt ,or with residue in high levels of every man-made chemical that is in your waste water. Such as nitrates, Dioxin, and Perchlorate, of which two(2) are known Cancer causing agents and are not biodegradable.

When the waste water comes to your treatment facility in Bullhead City in it maybe, Parts per Billion (ppb), but most likely you do not have any idea what’s in the water. And after you supposedly treat the waste water, in could go out it could parts per hundred. As one old Senator use to say a Billion hear a Billion there pretty soon they begin to add up.

So a simple fact of the matter is you, Bullhead City, do not know what you are starting with, so how do you what you will end up with?

This Notice also includes any new facilities that you may bring on line at a later date. This includes any facilities under construction at the present time for purpose of waste water treatment ..

*Finally there is an area map of the neighborhood in which we live, 1355 CHEROKEE Ln. It shows the well located at Kaibab Dr.. This area MAP has the location of the people that have, and/or have died of Cancer. The **RED DOTS** on the MAP are the people who have **DIED!! THE TOTAL IS SEVEN (7)**. The **ORANGE DOTS**, are the people who have contracted **CANCER** in the past four (4) years. The **BLUE DOTS** show where pets have died of cancerous tumors **THAT TOTAL FOUR(4)**. **THE GREEN DOTS** are for the people that have contracted and have been diagnosed with other strange illnesses, in the past four years, that we know of at the time of this notice. **SEE EXHIBIT MAP OF EFFECTED AREA.***

We have wrote to the two(2) Senators from Arizona, McCain, and Kyl, asking if the Senator from Nevada John Ensign is the one doing the Perchlorate study in Lake Mead, and in the Colorado River that could only come from one plant. Located in Henderson, Nevada, that produced solid Rocket fuel. The Senator we understand is conducting studies to determine how widespread the contamination is.

Conclusion:

- 1. The water in Bullhead City, Arizona, is already polluted, as reports clearly show. Then, when you treat the waster water, and concentrate it down, you are making biosoild waste, and effluent water, that is highly contaminated, and Not fit for Human use, or fit to be used where human contact can occur as stated in the AAC Title 18.*
- 2. The Septic tank problem is not the whole problem. This is known by city officials Bullhead City, and their assigned Contractors have failed to completely remove the problem. The leach fields are still intact, and will continue to leach into the*

ground water for a number of years into the future. Our leach field is under our grass and will continue to operate, because the water in the yard runs to the lowest, point which is that leach field.

- 3. The real problem is from up steam, and the reports prove this assertion.*
- 4. Without a **Clean Water Filtration Facility** in place the, (**BULLHEAD CITY** has no such facility), either does the **Three Water** companies that supply water to **Bullhead City, Arizona**, problem will never go away, because you can Not get everything out of the water.*
- 5. Bullhead City has No intention of honoring the Consent Decree. Its own Chief Engineer, Pawan Agrawal, has said so on numerous occasions, with Statements Quoted in the Mohave daily News, and statements at town hall meetings that are recorded on video tape. **SEE EXHIBIT BACKGROUND INFO.***
- 6. If the Curtis's would have known of the Water Problem, we would have Not brought the Property at 1355 Cherokee Ln. So some is lying about something.*
- 7. Bullhead City, Arizona has failed there fiduciary responsibility to the Citizen. We believe this contamination caused MY cancer.*

Sincerely

Alan A. Curtis _____

Linda A. Curtis _____

CERTIFICATE OF SERVICE

I certify that, on this date, I mailed one (1) copy of the second Sixty (60) Day Notice, under 33 U.S.C. 1365 (1a)(1b)(2a)(2b) of the Clean Water Act, of by causing the same deposited in the United States Mail at Bullhead City, Arizona by First-class postage, and /or Certified Domestic Return Receipt fully prepaid thereon as follows:

:

Ronald C. Ramsey
City Attorney
City of Bullhead City
1255 Marina Boulevard
Bullhead City, Arizona 86442-5733

Terry Goddard
Office of the Attorney General
Department of law
1275 West Washington Street
Phoenix, Arizona 85007-2997

Brain Sandoval Attorney General
Carson City Office
100 North Carson Street
Carson City, Nevada 89701-4717

Clark County Nevada
District Attorney
200 South 3rd Street
Las Vegas, Nevada 89155

US Department of the Interior
Secretary Gail Norton
1849 C Street N.W.
Washington DC. 20240

Attorney General John Ashcroft
US Department of Justice
950 Pennsylvania Avenue N.W.
Washington DC. 20530-001

William J. Ekstrom
County Attorney
P.O. Box 7000
Kingman, Arizona 86402-7000

U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105-3901

Arizona-American Water Company
19820 N. 7th Street Suite 201
Phoenix, Arizona 85024

Arizona-American Water Company
860 Gemstone
Bullhead City, arizona86442

Nevada Division
of Water Resources
400 Shadow Lane, Suite 201.
Las Vegas, Nevada 89106

Senator John Ensign
Lloyd George Federal Building
333 Las Vegas Boulevard South
Suite 8203
Las Vegas, Nevada 89101

Senator John McCain
450 West Paseo Redondo, Suite 200
Tucson, Arizona 85701

Senator Jon Kyl
7315 N. Oracle Road ,Suite 220
Tucson , Arizona 85701

Senator Harry Reid
Lloyd.George Building
333Las Vegas Blvd. S. Suite 8016
Las Vegas, Nevada 89101

Senator Barbara Boxer
312 N. Spring Street suite 1748
Los Angles, California 90012

Senator Dianne Feinstein
Guillermo Gonzalez, Deputy State Director
11111 Santa Monica Blvd. Suite 915
Los Angles California 90025

Arizona Department of
Environmental Quality
1110 W Washington St
Phoenix, Arizona 85007-2952

Date October 10, 2003

By _____
Alan A. Curtis " Private Citizen "

*Alan & Linda Curtis
1355 Cherokee Ln.
Bullhead City, Arizona 86442
Ph: (928)763-5725*

October 17, 2003

*Kerr-McGee Corporation
Kerr-McGee Center
P.O. Box 25861
Oklahoma City, Oklahoma 73125*

*Re: Perchlorate Contamination Problem at Henderson Nevada
site;*

To Whom It May Concern:

*Enclosed you will find copies of the First Sixty(60) Day notice,
along with a copy of the Second Notice, also enclosed is the
Certificate of Service, dated October 10, 2003.*

*This is to inform you that Kerr-McGee, and Ampac(parent
company of Pepcon), you will be added as Defendants to the
Federal law suite pending at the close of the second Sixty(60) day
notice given to all.*

*We also understand that some of you may have already filed law
suits of your own against the Department of Defense, an Agency of
the Federal Government of the United States of America. And
some of you have entered into Consent Agreements with the State
of Nevada.*

*The length of time it took to find my cancer, is because I have
Cancer Stage 4, it's in remission now. For how long nobody
knows, but my family will continue to press this action if something
would happen to me before the conclusion of this matter. And
because of the amount of testing that were done on me, and the*

number of question that where asked of me, if I was ever exposed to any Dioxin, or any other none cancer causing agency.

We have looked at every thing, at home, and at where I worked, and, what I worked with, we compiled a number of Manufacturing Safety Data Sheets (MSDS), of which we now have Kerr-McGee(MSDS) sheet on Perchlorate that was in the file at Nevada Department of Environmental Quality.

We have reviewed and copied a number of files on Perchlorate. From the U.S. EPA, Arizona's DEQ, Nevada's DEQ, and private organizations. This has allowed us to complied a mass of documents over the past Three(3) years.

We are giving this Courtesy Notice to all potential Defendant's, the reason for the Notice is simple the Drinking Water in the Colorado River is Contaminated, with a number of contaminates, one of which is Perchlorate. And the Level of Perchlorate Contamination reaches all the way to the Mexican Boarder.

Sincerely,

Alan A. Curtis

Linda A. Curtis

Alan & Linda Curtis
1355 Cherokee Ln.
Bullhead City, Arizona 86442
Ph: (928)763-5725 mm1313@citlink.net

October 10, 2003

Re: Second Sixty(60) day Notice:

To the City of Bullhead City Arizona, and Others:
To Whom It May Concern:

This is your second Sixty (60) day notice under U.S.C. 33 1365(1)(a)(b),(2)(a)(b). [S]econd, notice gives the alleged violator “an opportunity to bring itself into complete compliance with the Act this likewise render unnecessary a citizen suit.” **ONCR Action, 286 F.3d at 1444. As stated by the Supreme Court:**

There was only One (1) response to the first Sixty(60) day Notice, date July 15, 2003.

That response dated of August 15, 2003, was from Lori Gray Acting for Robert W. Johnson Regional Director for the Bureau Of Reclamation Lower Colorado River Office, Boulder City Nevada. This response states that the Bureau is “working on water quality issues with local entities”.

As we stated in the first Sixty(60) Notice dated July 15, 2003, the water Quality has been an issue since the Mid 80’s. The problem with the water quality is not just a local issue, it comes from up steam, from Clark County Nevada, which services the Townships of Las Vegas, Boulder City, Henderson, Laughlin Nevada, and others.

We issued the First Sixty (60) day notice to the State of Nevada, and Clark County Nevada on July 15, 2003.

This notice was to advise the proper administrators, that there is a problem with the drinking water, and to explain our concerns, and to show the administrators where we felt there is a problem. You leave us no choice but, issue this Second Sixty(60) day notice. This means that you must be in complete compliance with the Act.

You failed to respond in a timely manner to our first Sixty(60)day notice, which leaves us no alternative but to take this course of action to rectify the problem with the Water supply in Bullhead City, Arizona , in the County of Mohave Arizona.

At the conclusion of the second Sixty(60) day notice, we will be filling suit in the Federal Court of Arizona for relief in this matter.

We will also be seeking in Federal Court, unspecified Damages and Attorney Fees, as set forth by a Jury trial. We will also be seeking to have the Judge in Federal Court of Arizona, to over see the Clean up, and to take over the administration of the problem outlined in the complaint.

Sincerely,

Alan A. Curtis

Linda A. Curtis

Alan & Linda Curtis
1355 Cherokee Ln.
Bullhead City, Arizona 86442
Ph: (928) 763-5725 mm1313@citlink.net

October 10, 2003

Re: This is your second Sixty(60) day notice under U.S.C. 33 1365 (1)(a)(b),(2)(a)(b). *[S]econd, notice gives the alleged violator "an opportunity to bring itself into **Complete Compliance with the Act** likewise render unnecessary a citizen suite."* **ONCR Action, 286 F.3d at 1444.** As stated by the Supreme Court:

To the Director U.S. Environmental Protection Agency Region IX, San Francisco, California:

Your Office has failed to answer in a timely manner the first Sixty(60) day notice dated July 15, 2003.

The Notice dated July 15, 2003, was to advise the proper administrators, that there is a problem, as outlined in the first notice. By failing to respond, you leave us no choice but to file suite in Federal Court of Arizona at the conclusion of the second Sixty(60) day notice.

We will also be seeking in Federal Court, unspecified damages and Attorney fees, as set forth by a jury trail. We will also be seeking to have a Federal Judge in Arizona, to over see the clean up, and to take over the administration of the problem outlined in the complaint.

Sincerely,

Alan A. Curtis

Linda A. Curtis

Alan & Linda Curtis
1355 Cherokee Ln.
Bullhead City, Arizona 86442
Ph: (928) 763-5725 mm1313@citlink.net

October 10, 2003

Re: This is your second Sixty(60) day notice U.S.C. 33 1365 (1)(a)(b),(2)(a)(b). [S]econd, notice gives the alleged violator “an opportunity to bring itself into **Complete Compliance with the Act.** Likewise render unnecessary a citizen suite.” **ONRC Action, 286 F.3d at 1444.** *As stated by the Supreme Court:*

To the Attorney General of the United States of America, The Honorable John Ashcroft:

Your office has failed to answer in a timely manner the first Sixty(60) day notice dated July 15, 2003.

The Notice dated July 15, 2003, was to advise the proper administrators, that there is a problem, as outlined in the first notice. By failing to respond, you leave us no choice but to file suite in Federal Court of Arizona at the conclusion of the second Sixty(60) day notice.

We will also be seeking in Federal Court, unspecified damages and Attorney fees. As set forth by a jury trail. We will also seeking to have a Federal Judge in Arizona, to over see the clean up, and to take over the administration of the problem outlined in the complaint.

Sincerely,

Alan A. Curtis

Linda A. Curtis

Alan & Linda Curtis

1355 Cherokee Ln.

Bullhead City, Arizona 86442

October 10, 2003

Ph: (928)763-5725 mm1313@citlink.net

*Re: This is your second Sixty(60) day notice under U.S.C. 33 1365 (1)(a)(b),(2)(a)(b). [S]econd, notice gives the alleged violator "an opportunity to bring itself into COMPLETE COMPLIANCE with the Act. Likewise render unnecessary a citizen suite." **ONRC Action, 286 F.3d at 1444.** As stated by the Supreme Court:*

To The Secretary of the U.S. Department of the Interior Gail Norton:

Your Office has answer in a timely manner the first Sixty(60)day notice dated July 15, 2003. But your answer raised more question and was vague. As noted in the enclosed copy of the notice to Bullhead City, Arizona, dated October 10, 2003.

The Notice dated July 15, 2003, was to advise the proper administrators, that there is a problem, as outlined in the first notice. By failing to respond, you leave us no choice but to file suite in Federal Court of Arizona at the conclusion of the second Sixty(60) day notice..

We will also be seeking in Federal Court, unspecified damages and Attorney fees, as set forth by a jury trail. We will also be seeking to have a Federal Judge in Arizona, to over see the clean up, and to over the administration of the problem outlined in the complaint.

Sincerely,

Alan A. Curtis _____

Linda A. Curtis _____

***THE FIRST
SIXTY(60) DAY
NOTICE UNDER
THE
C.W.A.***

“ UNITED STATES CLEAN WATER ACT ”

THE MAP

OF THE

EFFECTED AREA

IN

BULLHEAD CITY ARIZONA

THE MAP
Of THE
MOST
CONTAMINATED AREA
IN
BULLHEAD CITY ARIZONA
SDI-2
ATTACHMENT "B"
OF
CV.97-09626

EXHIBITS

BACK GROUND

INFORMATION

ON

ORGANIC COMPOUNDS

AND

PHARMACEUTICALS

FOUND IN

U.S

STREAMS

EXHIBITS

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ON

BULLHEAD CITY ARIZONA

EXHIBITS

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ON

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ON

ENVIRONMENTAL NUISANCE

ON

AQUIFER WATER
QUALITY STANDARDS

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DISCHARGES
INTO THE
AQUIFER

EXHIBIT

CLEAN WATER ACT 3

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CITIZEN SUITS

CERTIFICATE

OF

SERVICE

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John McCain letter Oct. 17, 003

John Ensign Letter Oct. 26, 003

Trent Franks Rep Nov 14, 003

Alan & Linda Curtis

1355 Cherokee Ln.

Bullhead City, Arizona 86442

October 10, 2003

Ph: (928)763-5725 mm1313@citlink.net

***Re: The First, and Second sixty(60)day Notice under 33 U.S.C. 33 1365,
1a,1b.2a.2b. of the CLEAN WATERACT:***

***TO HONORABLE SENATOR'S , John McCain, Jon Kyl, John Ensign
Harry Read, Dianne Feinstein, Barbara Boxer.***

***Enclosed is a copy of the Second Sixty(60) day notice issued to Bullhead
City Arizona, Dated October 8, 2003. All of you already have a copy of the
first sixty(60) day Notice, issued to Bullhead City, Arizona, dated July
15,2003.***

***Enclosed also is a copy of the second sixty(60) day notices, issued to all
that have been served a first sixty(60) day notice as follows.***

***Attorney Generals for the states of Arizona, Nevada, the Federal
Government, the Secretary of the Interior, County of Mohave Arizona,
Clark County Nevada, Arizona-American Water Company, Region IX
EPA, ADEQ of Arizona, and Nevada Water Resources.***

***We are sending this information to you because you already Know of the
water problem, but all have chose to ignore the problem.***

The Problems with the Drinking Water is no laughing matter, most of you have read the reports. But I guess you all figure that a hundred thousand or so citizens are just so much collateral damage.

The water supply that we are talking about serves about Twenty Million People, they all rely on this water from the Colorado River, for their drinking water.

The Senate has passed the Defense Bill that has a rider in it for the study of Perchlorate, health affects on Humans, by one of your own Senators John Ensign. Therefore you are admitting there is a problem, and apparently some one has already died from the Perchlorate, or has been injured by the Chemical.

I have Cancer Hodgkin's Stage 4, its in remission. With the information that we have now we have come to the conclusion that the Perchlorate in the water supply is a direct cause of my Cancer.

In the first Sixty (60) Notice to Bullhead City there is a area Map of where we live, take a look at it again. This is not what is called a "STATISTICAL CLUSTERS", PEOPLE HAVE DIED!!! I should have died, that's what all of the Doctors tell me. (copy in the first notice).

WE need your help cleaning up this Problem with perchlorate. You know where the contamination is coming from, and you know who caused the spill, so what are you waiting for. More innocence men woman, and children to be affected, by the contaminated water that comes from the Colorado River.

As we stated above, you all know this Water goes to Los Angles, Phoenix, and even the Country of Mexico, that effects approximately 20,000,000 people or more!

With the Perchlorate in Lake Mead, from the closed Rocket Plant it has reached all the way Down to Yuma Arizona, and is found in the lettuce that is grown their, and has also reached the Mexican Boarder, and even the Ocean.

Before you Six Senators make any water agreements. All of you better take into concentration that there are also Citizens living in Rural areas, along with Citizens in the large metropolitan areas.

The information that we have, shows that the testing was very limited, if you have really look at the information, and the maps from the reports. You will see only three(3) sites where tested, from Lake Mohave to the canal supplying water to California, for Perchlorate.

We also know because of our FOIA request, over the past four(4) years, that some of you already know about the problems, but have done little to come up with a fix for the problem, if it takes a law suite to accomplish this

We have a law suite ready to go. We will file the law suite in Federal Court, naming all six(6) of you Senators, as defendant's, as well as others, in the law suite to Block any attempt you six Senators, and others, who try to come up with a water agreement that does not have provision in it to clean up the water supply. For all of the Citizens, not just the ones in Large metropolitan area

PLEASE TAKE A LOOK AT THIS!!

Sincerely

Alan A. Curtis _____

Linda A. Curtis _____

Alan & Linda Curtis
1355 Cherokee Ln.
Bullhead City, Arizona 86442

October 23, 2003

Office of the Attorney General
1275 West Washington
Phoenix, Arizona 85007-2926

Dear Mrs. Oursland:

Thank You for your letter dated October 16, 2003. I think that we will be discussing the problems with the water quality, in Bullhead City Arizona, in greater deals in the very, very, very near future.

Again Thank you for your response.

Sincerely,

Alan A. Curtis
Private Citizen

Linda A. Curtis
Private Citizen

Senator John McCain

450 West Paseo Redondo, Suit 200

Tucson, Arizona 85701

July 28, 2003

Dear Senator McCain:

We received the copy of the notice back, this was for your information only, we have asked you in the past for help

This is simply to show you what the problem is, if you feel that you are to buss to look at it fine, but when you say that you represent the people of Arizona you better look at All of Arizona, not just the Phoenix Area.

You and Senator Kyl have been working on a water deal for the people of Arizona, as well as California.

The water that's in that deal is polluted, and has been polluted for some time, as far back as 1987 the Arizona Department of Environmental Quality has Know that

The Water that in the Central Arizona Water Project, and as well as the water that goes to California through the aqueduct just below Lake Havasu comes from Bullhead City and above.

All we are asking is that you that another look before you make that decision not to get involved

Sincerely,

Alan A Curtis

A Long Time Republican

*Alan A. Curtis
1355 Cherokee Ln.
Bullhead City, Arizona 86442 November 5, 2003*

*United State Environmental
Protection Agency Region IX
75 Hawthorne Street
San Francisco, CA. 94105-3901*

RE: FOIA Request, 9-RIN-00488-03 for the following Documents:

Mrs. Schechter:

I would like the following information regarding the way the EPA. Tests for water and or liquids. Recently I have seen on some test reports for Perchlorate, the number 314 as the method for sampling. I would like a copy of that method, and any others that the EPA uses for sampling.

Does the EPA have parameters for test water, and or liquids, and is it used exclusively in the water industry, or is there other approved methods for sampling water and or liquids?

Does the EPA have a set parameter for testing what you call a plume, or a contaminated ground water supply, or a contamination from some substances like Perchlorate, that gets onto the ground water supply?

I wold like a copy of those parameters, Does the EPA have more than one set of parameters for testing a plume?

If this information is available on the Internet, I do have the ability to open adobe or PDF files.

Sincerely,

*Alan A. Curtis
1355 Cherokee Ln.
Bullhead City, Arizona 86442*

October 26, 2003

*Senator John Ensign
333 Las Vegas Boulevard, South
Las Vegas, Nevada 89101*

Dear Senator Ensign:

Apparently, you have misunderstood my letter to you dated October 16, 2003. The letter was to inform you that we were asking for someone to help Us! In the letter, there was a certificate of service, that clearly showed, that the Two Senator's form Arizona were excluded in the letter we sent.

The reason for the letter to you was to inform you that I needed help, and we did not care who could assist us. In recent weeks We have sent you a number of correspondences, to make you aware of the water problem of Lake mead, and the Colorado River, which you are already aware of, because of you action in the Senate to appropriate Money in the Defense Bill, to study the Health effects of Perchlorate(Rocket Fuel) on Humans.

Apparently, you have regarded the information, that we have sent you as so much Junk mail? We hope that's not the case. I'm 100% disable because of my cancer, I'm retired out the Las Vegas local 872 of the laborers, I have worked in your state for 10years building casino, and schools, and the Federal Court House.

So we thought that just by chance some Senator would help us, we do not care which one.

Sincerely,

Alan A. Curtis Along time Republican

*Alan A. Curtis
1355 Cherokee Ln.
Bullhead City, Arizona 86442
Ph: (928)763-5725*

October 17, 2003

*Senator John Mc Cain
450 West Paseo Redondo, Suite 200
Tucson, Arizona 85701*

*Re: Water deal signed October 16,2003, By Secretary Gail Norton,
This is a FOIA Request;*

Dear Senator McCain:

*In today paper is a article about Secretary Gail Norton signing the
Seven State water aggrement. What I'm asking for is a copy of that
aggrement.*

*Recently I sent your office a copy of a Sixty(60) day Notice, that
has to do with the water quality in Bullhead City, Arizona. I hope
that you have had time to look at it?*

*I have Cancer and this deal is very important to me and my family,
because if there is no provisions in it for the clean up of the water
problem, then the deal fails grossly short of what We expect you in
Congress to do to protect the Citizens of Arizona.*

Sencerily,

*Alan A. Curtis
A very Long Time Republican, and supporter!!*

Cumner

RECEIVED

DEC 11 2003

AZ CORPORATION COMMISSIO
DIRECTOR OF UTILITIES

BACK GROUND

INFORMATION

ON

BULLHEAD CITY ARIZONA

City following its own interests in sewer plans

By COLBY UNDERWOOD
The Daily News

BULLHEAD CITY — The city's sewer plans are based on its own interests, not those of the Arizona Department of Environmental Quality.

That's what city engineer Pawan Agrawal told an audience of people hoping their neighborhood isn't required to connect to sewer for a while. The statement is of interest because the department sued the city in 1997 and forced a "consent decree" outlining the city's sewer plans.

The meeting Wednesday was held to discuss the city's plans for sewer improvement district 3. Plans call for that district to include Arroyo Vista Estates and Clearwater Hills, which are subdivisions near the city's southern limits.

Sewer improvement districts are formed to require residents to pay for sewer connections. Those connections are financed through

government loans. The city has already completed sewer improvement district 1 and is designing sewer improvement district 2.

The design for district 3 is scheduled to begin December 2004. The Arroyo Vista Estates Homeowners Association believes it should be in improvement district 6, which is scheduled to begin July 2011. The association's position is supported by the consent decree, which does not include Arroyo Vista or Clearwater Hills in district 3.

The association's president, John Mieding, Wednesday focused a prepared speech on the decree and the environmental effect septic tanks have on ground water and the Colorado River. Septic tanks are believed to be a major contributor to nitrate in the water. Nitrate is a pollutant that sewer is supposed to help eliminate.

Of all the areas in the city

See Sewer on Page A5

• Sewer

Continued

without sewer, Arroyo Vista Estates causes the least nitrate pollution. Mieding believes the areas with higher pollution should be required to connect to sewer before Arroyo Vista Estates.

City engineer Agrawal agreed that Arroyo Vista Estates poses the least environmental threat. But he presented a "matrix" to support his position that the subdivision should be part of improvement district three.

The matrix included five categories that helped list which areas would be required to connect to sewer first. Categories include environmental threat, population density, potential of defaults on sewer bills, distance from a sewage treatment plant, and the plant's capacity.

Arroyo Vista is close to a sewer plant with adequate capacity, which causes the subdivision to rank high on Agrawal's matrix. The homeowners association had nev-

er seen that matrix before.

The association's lawyer, Charles Gurtler, called the matrix suspect. Some audience members wondered if Agrawal made the matrix just for Wednesday's meeting and hadn't used it to devise the city's sewer plan. Agrawal claimed he made the matrix early this year.

The Arizona Department of Environmental Quality sent no representatives to Wednesday's meeting despite being invited by the city.

2-27-2002

Council runs afoul of open meeting law by taking questions from audience at workshop

By HOWARD DECKER
The Daily News

BULLHEAD CITY — The City Council was running afoul of the state's open meeting laws at their workshop meeting Thursday, but were saved by comments by Interim City Attorney Kent Foree.

Arizona Department of Environmental Quality (ADEQ) personnel met with the Council during the workshop held to permit the officials to discuss wastewater issues with the Council. After some discussion, Mayor Diane Vick opened the meeting up to questions from the audience.

"Alex, if you want to ask a question, come up here and ask a question," Vick said.

Alex Cariaga, a property owner within the city, asked if "Old Bullhead City" was in violation with ADEQ.

Vick said the ADEQ personnel "were probably not

going to be familiar with the specific areas within our cities.

"We're going very off the agenda," Foree said. Cariaga said he was asking the right questions, about groundwater pollution saying that was why the Council brought the ADEQ personnel to the city for the meeting.

"I'm just concerned about the way this meeting has been agendized," Foree said, adding the meeting had been agendized as a workshop for the Council to talk in general with ADEQ regarding sewer issues, and a consent decree overview.

"To open it up to questions from the floor," he said, "I think it was beyond" the agenda.

Councilwoman Jacquie Jessie asked if Foree was saying there would be no public input at all and Foree said he was "kind of con-

cerned about putting ADEQ on the spot, to try and respond to specific questions when we got them here under a general agendized item to give a general overview."

"Since I participate in the Attorney General's Open Meeting Law," ADEQ attorney and Attorney General's Office employee Laurie Woodall said, "I concur with Mr. Foree."

Cariaga said at the last Council meeting, he believed, the public was told that the ADEQ personnel would be available to answer questions from the public.

Woodall said ADEQ personnel "would be happy" to take Cariaga's name and phone number and have someone from ADEQ answer his questions.

Cariaga said he had three questions for ADEQ and another member of the public also said he had questions.

Soccer field grass could change color

By COLBY UNDERWOOD

The Daily News

BULLHEAD CITY — The Rotary Park soccer field grass on the north side of the parking lot could change from brown to green soon.

"Guys have gone in and leveled it and put sand in," said Doug Lutz, interim city public works director. "It will be seeded in the next week. It should be ready for fall play of soccer or Pop Warner."

Parts of the field turned brown last year due to irrigation problems, he said.

"We have had to add a couple filters to make sure the sprinkler heads don't plug up," Lutz said.

Part of the plugging problem is due to algae, which grows in the city's sewer pond at Rotary Park. The pond, filled with treated sewer water known as effluent, is used to irrigate the park.

"Even though we treat it with chemicals and we have fish in there to eat the algae, it doesn't take much to plug up a sprinkler head," Lutz said. "It seems to be working pretty well right now."

Algae wasn't the only problem.

"Another problem is a couple main irrigation lines from the pool itself did not hold," Lutz said. "We had to go in and replace some of the lines."

the right message about what's the right behavior."

Kingman may pay more for wastewater irrigation

KINGMAN — Using treated wastewater to irrigate a proposed golf course north of Kingman would cost four times as much as using groundwater, an engineering firm says.

But City Manager Roger Swenson said issues of water conservation and long-term water supply for growing Kingman could make effluent water the best choice anyway.

Carter-Burgess, a Phoenix engineering firm, said treated wastewater would cost four times as much as groundwater and would require a \$3 million investment in the treatment facility.

The city previously ruled out treating wastewater for another golf course and for city parks.

City is technically in violation of sewerage order, attorney general's representative says

By HOWARD DECKER

The Daily News

BULLHEAD CITY—The city is technically in violation of its consent order to sewer the city and the potential fines have already reached \$500,000, Laurie Woodall, an attorney with the state Attorney General's office, told the City Council at a workshop Thursday night.

Woodall was acting as attorney for the Arizona Department of Environmental Quality (ADEQ) during the workshop held to permit ADEQ officials to discuss wastewater issues with the Council.

"To date we have not received a formal submittal (of plans to sewer priority areas two and three) and that was due, I believe, in June of 2001, so technically, the city is not in compliance with the consent decree," Woodall said.

Interim City Attorney Kent Foree said Friday that the documents were, in fact, filed.

He said city records indicate the plans were filed with the

state on June 30, 2000 and came from Burns and McDonald, the city's consultants.

The penalties for non-compliance with the submittal deadline, Woodall said, is \$1,000 a day for the first 30 days and \$1,500 a day from 30 to 60 days and \$3,000 a day after that," she said.

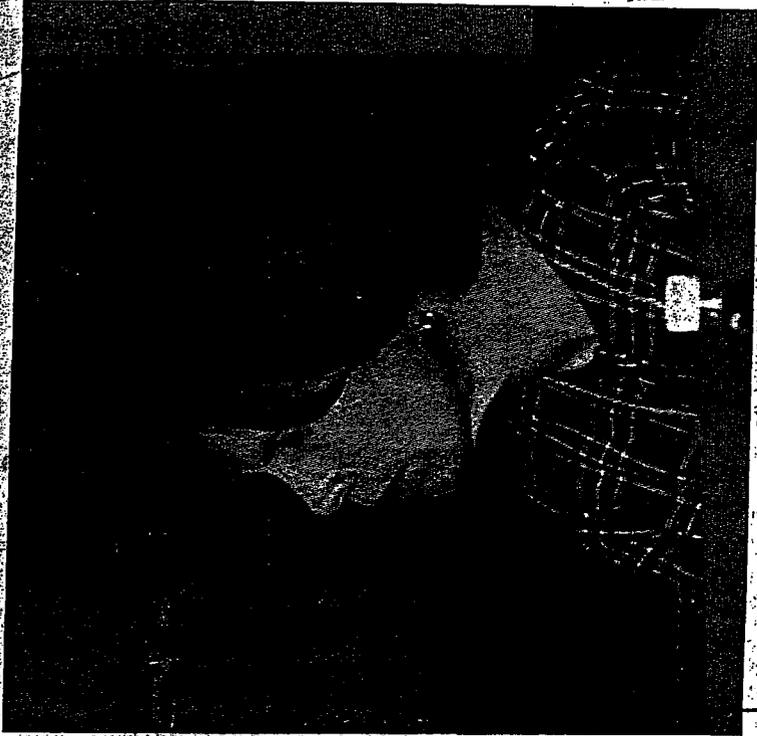
"So, if you just look at the issue of the failure to submit a tentative schedule for the sewer priority areas two and three," she said, "and you look at them at separate violations, you're talking well over \$500,000 simply for that failure to submit a tentative schedule."

If the state were to fine the city, she said, it would first have to give written notice.

"The obligation is ticking from the day that it was supposed to be filed," she said.

It doesn't mean that the Attorney General's office has to go to court and seek those sanctions, Woodall said.

After the state gets the proposed schedule, it must ap-



Staff photo by Howard Decker
Laurie Woodall, an attorney with the state Attorney General's office, spoke to the City Council at a workshop Thursday night. Woodall was acting as attorney for the Arizona Department of Environmental Quality.

prove it, she said. Councilmember Franz Brink told Woodall her remarks had made "a powerful impression" on the Council.

"and hopefully, many of our citizens are listening and if they are not listening I would hope that our local newspapers would put at least some of our comments in print

so that it is indelibly etched in the minds of the people that occasionally malign us."

"I hope that if my remarks make their way into print that it would be extremely clear that I am talking about possible sanctions," Woodall said, "and that the depart-

See City on Page A7

DEQ gives background on Bullhead City mandate

COLBY UNDERWOOD
Daily News

BULLHEAD CITY — Overwing sewers, failing septic tanks, and contaminated drinking water are reasons the state gave recently for forcing Bullhead City to connect its homes to sewer. But the state didn't tell the whole story, according to city officials. The Arizona Department of Environmental Quality released a six page report late Thursday describing the reasons behind the city's sewer mandate. The state sued the city in the 1990s over sewer related problems.

The city settled the case in 1997 by signing a consent decree, which has forced thousands of Bullhead City home and business owners to pay to switch their sanitary systems from septic to sewer. Part of the financial burden has been subsidized by the city.

Officials recently asked the state to explain the reasons behind the consent decree. It was that prompted the state to create Thursday's report. In the report, they include the technical basis and a lot of water quality data," said Arwan Agrawal, city engineer, Friday. "I thought the basis of the consent decree had more to do with (the state suing) sued by the Sierra Club for not protecting the ground water in this area.

"I was told that's what prompted them to do all this monitoring in this area. Then they found there were problems here, were able to take

The state began investigating this area in 1994 for environmental law violations, according to Thursday's report. Bullhead City's sewer overflowed 19 times between 1994 and 1997, according to the report. The state also reported septic tank failures during its investigation.

"A large body of evidence points to discharges from septic tanks as being a key contributor to the nitrate contamination of ground water in the Bullhead City area," wrote Charles Graf, a state water quality official.

In 1994, his department tested 53 wells in Bullhead City for nitrate. High levels of nitrate can kill babies via blue baby syndrome, according to Graf. Three wells in Bullhead City had more than 10 milligrams of nitrate per liter of water. Ten milligrams per liter is the maximum legal level of nitrate in water.

Another eight wells test-

See Sewer on Page A5

Sewer

Continued

ed between seven and 10 milligrams per liter. And nine wells tested between three and seven milligrams per liter. The natural background level of nitrate in Arizona water is usually fewer than one half milligram per liter, according to Graf.

Three milligrams per liter "indicates a human waste-caused increase above the

natural background level of nitrate," Graf wrote. "In much of the sampled area, septic tanks are the only significant source of nitrate discharges."

Graf compared studies done in 1989 and 1994 on nitrate contamination in Bullhead City water.

"One well located in an area where septic tanks had been replaced by a sewer collection system showed a dra-

matic decrease in nitrate levels from 15.90 milligrams per liter in 1989 to 7.20 milligrams per liter in December 1994," he wrote.

Nitrate levels remained high in Bullhead City water, according to data collected in 2002, Graf wrote.

"The data show that several private wells have a nitrate concentration of greater than 10 milligrams per liter," he wrote. "Also, tests from some

public water systems show nitrate concentration between seven and 10 milligrams per liter.

"Because public water systems cannot legally serve drinking water with a nitrate level greater than 10 milligrams per liter, in some cases, system owners have had to blend wells high in nitrate with wells lower in nitrate."



Jane Dee Hull
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.adeq.state.az.us



Jacqueline E. Schafer
Director

July 19, 2002

Mr. Dan Dible, City Manager
City of Bullhead City
1255 Marina Avenue
Bullhead City, AZ 86441

Re: Sewer Connection Requirements of Consent Decree, CV97-09626

Dear Mr. Dible:

In our recent telephone conversation, we discussed several issues regarding the Consent Decree and Bullhead City's obligation to connect properties with septic tanks to the municipal sewage treatment facility when a sewer line becomes available. This letter summarizes and expands on the points we discussed.

1. ADEQ expects Bullhead City to sewer all areas within Bullhead City's Service Area that reasonably can be sewered. Karen Smith, ADEQ Water Quality Division Director, iterated this in her letter of July 1, 2002, to Mayor Diane Vick. Not only do Priority Areas 1, 2, and 3, specifically identified in the Consent Decree, need to be sewered, but other areas of growth or high septic tank density. In these areas, conditions are very similar to Priority Areas 1, 2, and 3 with respect to probable septic tank failures (due to difficult soil conditions) and probable groundwater contamination (due to the collective discharge from septic tanks). Sections IV(6) and XV of the Consent Decree clearly allow the Department to require further action of Bullhead City if circumstances warrant. For example, the last part of Section XV states:

This decree is based solely upon currently available information. If additional information is discovered which indicates that actions taken under this decree are or will be inadequate to protect public health, welfare, or the environment, or to conform with applicable federal or state laws, ADEQ shall have the right to require further action.

As Ms. Smith stated in her July 1 letter, ADEQ anticipates no need to invoke these authorities and impose additional restrictions or require further actions as long as Bullhead City continues to aggressively pursue sewerage. In this regard, ADEQ has recently reviewed and approved Bullhead City's sewerage plan (approval letter dated July 3, 2002 from Robert Casey, Water Quality

Northern Regional Office
1515 East Cedar Avenue • Suite F • Flagstaff, AZ 86004
(928) 779-0313

Southern Regional Office
400 West Congress Street • Suite 433 • Tucson, AZ 85701
(520) 628-6733

Printed on recycled paper

Mr. Dan Dible, City Manager

July 19, 2002

Page two

Enforcement Unit, to Pawan Agrawal, Bullhead City Engineer). ADEQ would not have approved the plan if it had only addressed Priority Areas 1, 2, and 3, and not other unsewered areas such as Arroyo Vista Estates and Clearwater Hills. ADEQ appreciates Bullhead City's comprehensive approach to sewerage all appropriate areas of the city as expressed in the plan.

2. ADEQ's actions will continue to reflect its statutory mandate to protect groundwater in the Bullhead City Area for drinking water purposes. ADEQ has received several comments suggesting that sewerage is not necessary in areas outside of Priority Areas 1, 2, and 3 because there is no convincing evidence yet of groundwater contamination. As mentioned above, physical characteristics and land use conditions are very similar in those areas outside of Priority Areas 1, 2, and 3, so there is no reason to expect, in the long run, that groundwater impacts will substantially differ. In this regard, we wish to emphasize that although the Consent Decree is designed to remedy existing wastewater management and water quality problems, its ultimate purpose, consistent with state law, is to ensure that all groundwater beneath Bullhead City is protected and maintained for drinking water use. It would be irresponsible (and against state law) for ADEQ to allow pollution from septic tank sources to go unabated, considering the similarity in conditions, and not act until the evidence piles so high that there is little doubt that the groundwater would be rendered unsuitable for drinking.

Let me reemphasize--Arizona's groundwater program is a protection program. It is not a "wait until it's too late" program. In Bullhead City, like other areas in Arizona and throughout the United States, abundant data indicates that high septic tank densities have polluted and can potentially pollute groundwater to the point where it is unusable for drinking. One of the key reasons for ADEQ's enforcement action against Bullhead City in the first place was to address drinking water well closures because of groundwater contamination by septic tank discharges. ADEQ intends to protect the entire groundwater supply under Bullhead City for drinking water use and simply will not allow the problem to get out of hand again.

3. **Properties on septic tanks shall be connected to the sewer in accordance with Bullhead City's sewer connection ordinance. Section IV(6) of the Consent Decree states this requirement:**

Upon completion of the improvements and additions to the BHC Wastewater System in each priority area, in conformity with the respective design reports and firm schedules approved under this section, BHC shall require connection to the BHC Wastewater System, as provided for by BHC ordinance in accordance with ADEQ requirements, for all improved properties.

Bullhead City has some flexibility in determining when and how the connection is made once a sewer line becomes available in an area, but ultimately the connection must be made.

Mr. Dan Dible, City Manager

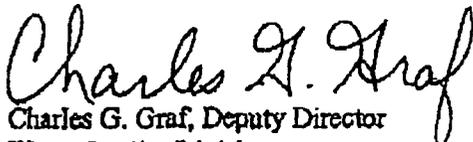
July 19, 2002

Page three

4. Any changes to Bullhead City's sewer connection ordinance must be approved by ADEQ. Section IV(2)(c) of the Consent Decree required Bullhead City to submit its ordinance regarding sewer connection criteria to ADEQ for approval. This was completed soon after the Consent Decree became effective. To ensure consistency with all requirements of the Consent Decree and with the sewerage plan recently approved by ADEQ, ADEQ will insist that Bullhead City submit for approval proposed changes to the connection ordinance.
5. Failure to expand the sewage collection system in accordance with the approved plan or connect properties to the sewer in accordance with ordinance are grounds for further enforcement action by ADEQ. Bullhead City's sewerage plan provides a comprehensive approach to resolving existing wastewater management and water quality problems and ensuring that public health and water quality will be protected in the future. ADEQ will meet with Bullhead City in August 2002 to discuss amending the Consent Decree to incorporate the sewerage plan. Should Bullhead City fail to implement the sewerage plan in accordance with the approved schedule or fail to connect properties to the sewer in accordance with ordinance, ADEQ will pursue appropriate enforcement measures allowed under the Consent Decree, including imposition of stipulated penalties, and any other appropriate measures allowed by state law.

We appreciate the progress Bullhead City has made to date in not only meeting the terms of the Consent Decree, but providing a proactive and comprehensive sewerage plan for the future. We look forward to continuing our cooperative efforts with you, Mayor Vick, and your staff. Please feel free to call me for any reason at (602) 771-4661.

Sincerely,



Charles G. Graf, Deputy Director
Water Quality Division

- c: Karen L. Smith, Director, Water Quality Division, ADEQ
Mike Traubert, Section Manager, Water Quality Compliance, ADEQ
Greg Ferguson, Southwest Arizona Community Liason, ADEQ
Greg Swartz, Director, Water Infrastructure Finance Authority of Arizona
Laurie Woodall, Assistant Attorney General, State of Arizona

8-1-02

Dear Ms. Schafer:

Please find another "MVDN" article.

Sure enough, now they want to amend the 208 Plan to delete the mandatory sewer hook-up policy. And what's worse is the City Manager and upper staff have been telling everyone that ADEQ has agreed to that.

Is it possible that the people in your department do not know how hard their predecessors worked to get this included in the 208 Plan. One of the most important items they stressed to us during the preparation of the 208 Plan was that there must be a mandatory sewer hook-up component. It was that 208 Plan component that the City ordinances were developed from. Without the plan and ordinances in place there will be no enforcement mechanism even in the Sewer Improvement Districts.

What is it that is so hard to understand that we must have mandatory sewer hook-up ordinances if we are ever going to clean up our groundwater problem?

What is it that is so hard to understand that we must consider environmental issues first if we want to clean up our groundwater problems?

Why is it so hard for your staff to understand that Bullhead's management and Council are on a politically correct direction and not considering the environmental issues. Environmental issues such as mandatory sewer hook-ups are not popular and might cost the Mayor, Vice Mayor and the one council persons running for re-election the end of this year some votes.

The real questions have to be:

Is your staff really agreeing to deleting the mandatory sewer hook-ups? Is your staff really going to allow Bullhead politicians to get by with making political decisions at the expense of the issue of protecting our groundwater? Is your staff going to allow RV parks, trailer parks, mobile home parks, motels and businesses which are immediately adjacent to the Colorado River and operating with old septic tanks continue to operate when a usable sewer line is less than 500 feet away?

If you are, then maybe it was right for the Sierra Club affiliate to take action and maybe it's time for them to look at it again.

cc: Karen L. Smith, Director
Water Quality Division
ADEQ
3033 North Central
Phoenix AZ 85012

ederation (SCMAF) in the Inland Valleys Pool Association for Bullhead City's Barracuda team for 2001. This bill was not paid until past Tuesday when the City of Bullhead City prepared the pay-

ment. Wade, manager of the City of Bullhead City admits to some responsibility on the part of the city. "Yes, we were responsible for the 2001 money at part of the situa-

tion. We knew nothing at all about old SCMAF bills not paid."

Having no knowledge about unpaid bills may be just the tip of the iceberg regarding the relationship between the City of Bullhead City and the Barracuda Swim Team.

Trying to explain what they learned just this past week, Miyashiro said, "Apparently the SCMAF bill was never paid in 2001. SCMAF says they sent repeated notices to the team over the year. After some time, they turned the issue over to collections. Ap-

have had the bills there in the office because they said they wrote a check to pay the bill this past Tuesday (July 23, 2002). They knew exactly how much and where to send it," said Miyashiro.

Miyashiro later corrected the above statement to say, "The bill came from Riverside, so I think it was actually from the Inland Valley Association."

The late payment came too late for this year's approximate 40 team members who had reservations and travel

conclusion.

Absolutely bewildered, Miyashiro explained further. "When we heard about the unpaid memberships, we asked what happened to the money paid last year by the kids and parents for membership. The money was found in the safe at the pool. Year-old checks and cash were apparently still there, money paid by people who are no longer in the area or no longer on the team. This is a mess.

See Swim on Page A7

City sewer law not being enforced

By COLBY UNDERWOOD
The Daily News

BULLHEAD CITY — A city law forcing septic tank users to pay for sewer connections will remain in effect for at least another six months. But it is not likely to be enforced.

The law is part of the city's code, its wastewater management plan, and a court-ordered agreement with the state. But all three will likely change. And, in the meantime, the city has no plans to enforce them.

The law requires all homeowners to pay for sewer connections if they live within 300 feet of a sewer line. The city plans to rewrite the law so no residential sewer connections will be required for years.

The Arizona Department of Environmental Quality, which is supposed to oversee its court-ordered agreement with the city, is working with the city to change the agreement. And the U.S. Envi-

ronmental Protection Agency, which is the highest ranking partner in the wastewater management plan, won't force the city to abide by the plan.

"We don't get involved in enforcing wastewater management plans," Cheryl McGovern, environmental protection specialist with the agency, said Friday. "It is for the local jurisdiction to determine how it is enforced."

The management plan is at least six months away from being changed, according to Pawan Agrawal, city engineer.

"We are already in the process of an update," he said.

The city will hold public hearings on the plan before it is sent to the county for approval. The county, state, and federal governments will also hold public hearings before they approve the plan.

By changing the plan, as well as the city's code and agreement with the state,

officials believe they are helping homeowners who can't afford sewer connections.

"Under the 300-foot rule, residents have to come up with all the money for sewer connections at once with no financing," Agrawal said. "And we don't think that's what the people want."

Only one of seven City Council members is adamantly in favor of enforcing the 300-foot rule.

"I absolutely believe we should enforce it," said Councilwoman Diane Valentine. "It's our ordinance."

Most sewer connections are expected to happen within improvement districts. Homeowners in improvement districts are given loans to pay for sewer connections.

Under that plan, "we are at least 10 to 15 years away before everybody is on sewer," Agrawal said.

He believes 5,000 to 6,000 lots are not connected to sewer.



Bullhead City Police Department officer David Valentine, a passenger on Arroyo Vista, went over an embankment in a ravine. The

Delivery of the Daily News by 6 a.m., call 763-6715

7-26-02

Jacqueline E. Schafer
Director, ADEQ
State of Arizona
3033 N. Central Ave.
Phoenix, AZ 85012

Dear Ms. Schafer:

Enclosed please find a "MVDN".

As you can see the Council and staff continue to refuse to enforce sewer "hook-ups", even though they are required by the 208 Plan and City ordinances.

The next thing will be they want to amend the 208 to delete the mandatory hook-ups.

When is ADEQ going to step in and stop this travesty?

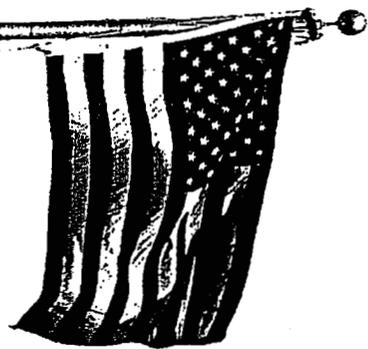
cc: Karen L. Smith, Director
Water Quality Division
ADEQ
3033 North Central
Phoenix AZ 85012

Chuck Graf
Deputy Director, Water Quality Div.
ADEQ
3033 North Central
Phoenix AZ 85012

Mike Traubert
Section Manager, Compliance
ADEQ
3033 North Central
Phoenix AZ 85012

Laurie Woodall
Assistant Attorney General
1275 W Washington
Phoenix AZ 85007

Mohave Valley DAILY NEWS



73
JULY 21, 2002

PUBLISHED IN BULLHEAD CITY, ARIZONA

\$1

Lack of sewer enforcement blamed on 'vague' rule

BY COLBY UNDERWOOD

The Daily News

BULLHEAD CITY — About 30 businesses may need to pay for sewer extensions to their property. The estimated cost for an extension and sewer installation on a commercial lot is \$1,000-\$20,000.

"Most people would be in the lower range of that estimate," said Pawan Agrawal, city engineer. "I would guess that there would be somebody in the upper range."

The city requires businesses within 500 feet of a sewer line to connect to sewer. But that rule has rarely been enforced. The lack of enforcement is due largely to the rule's vagueness regarding who pays for "laterals,"

according to city officials.

Laterals are sewer lines extending from the city's main lines to private lots. The City Council's majority believes the city must pay for them. Ron Ramsey, city attorney, believes the opposite but also believes the rule is unclear.

"This (rule) is at best vague and creates a conflict," he wrote in a memorandum to the City Council.

Agrawal has proposed changes to the rule to clear up the confusion. Those changes are under review by Ramsey and will be discussed at the next scheduled City Council meeting.

City officials transferred the sewer connection rule to the city engineer's office, which are within

a sewer line. But the City Council might have other plans. It already discussed the issue July 9.

Councilman Brian Bold said the city needs to clarify the rule. He wants a year before asking for rule clarification. Mayor Diane Vick agreed. Vice Mayor Don Sullivan said the council didn't want to make property owners dig into streets to place laterals.

Councilwoman Diane Valentine, who holds the minority opinion, wants the sewer connection rule enforced. Not only does she want businesses to follow the rule, she wants homeowners to follow it. The rule requires homes within 300 feet of a sewer

line be connected to sewer. But city officials don't plan to enforce it.

Based on the council's discussion July 9, the *Daily News* reported the city would not enforce its sewer connection rule. The lack of enforcement violates a court-ordered contract between the city and the Arizona Department of Environmental Quality. After reading the *Daily News* article, environmental quality official Chuck Graf telephoned Ramsey and city manager Dan Dible.

"Dan and I explained that (the article) was misstated," Ramsey wrote. "We are simply revising the rule."

Graf's department must approve changes to the rule before they take effect.

Council may pay more to keep temperatures down at City Hall

BY COLBY UNDERWOOD

The Daily News

BULLHEAD CITY — The

ter for minerals, Lutz wrote in a memorandum to the council.



side

A3

AD

7-22-02

Jacqueline E. Schafer
Director, ADEQ
State of Arizona
3033 N. Central Ave.
Phoenix AZ 85012

Dear Ms. Schafer:

Enclosed please find the minutes of the City Council Meeting of 7-9-02

This is the meeting the local newspaper reported and which the City Manager Dan Dible told Mr. Graf that the paper had mis-stated the meeting.

Read the minutes and I believe you will find that the paper did not mis-state the meeting.

It is clear for anyone to see that the upper management and Council are doing everything they can to not enforce the 208 Plan and City ordinance.

P.S.: Also enclosed is a copy of last Friday's Mohave Valley Daily News article which evidently was caused by Mr. Graf's phone call.

cc: Karen L. Smith, Director
Water Quality Division
ADEQ
3033 North Central
Phoenix AZ 85012

cc: Chuck Graf
Deputy Director, Water Quality Div.
ADEQ
3033 North Central
Phoenix AZ 85012

cc: Mike Traubert
Section Manager, Compliance
ADEQ
3033 North Central
Phoenix AZ 85012

cc: Laurie Woodall
Assistant Attorney General
1275 W Washington, Phoenix AZ 85007

Bullhead City to partially enforce mandatory sewer connection rule

By COLBY UNDERWOOD
The Daily News

BULLHEAD CITY — The city may soon require 30 businesses to connect to sewer.

The requirements come from the city's mandatory sewer connection rule, which the city plans to partially enforce. The rule applies to businesses within 500 feet of a sewer line and homes within 300 feet. But, due to confusion over the rule's details, it has rarely been enforced.

A council meeting will soon be scheduled to clear up the confusion. Then city officials will use the rule to require 30

businesses to connect to sewer. The city won't require homes and vacant residential lots be connected even though the rule applies to more than 300 of them.

They will be included in "improvement districts" instead. The districts attract low-interest loans and allow homeowners to pay sewer costs over a period of time. The process is cheaper for homeowners and will take years to complete. Improvement districts would be more expensive for many business owners, according to city officials.

"The commercial develop-

ment in the city is spotty," said Pawan Agrawal, city engineer. "There are several areas where it does not make sense to do a sewer improvement district because the cost would be higher. It is best to do a line extension to their property and let them connect."

Due to a court order, the city must enforce its sewer connection rule on homeowners as well as businesses. The city can change the rule but not without consent from the Arizona Department of

See Sewer on Page A6

• Sewer

Continued

Environmental Quality.

"We are aware of the city's request to ease the restriction on residential hookups," said Patrick Gibbons, department spokesman. "I sus-

pect we will continue to work with the city on this issue."

City attorney Ron Ramsey is reviewing proposed changes to the rule. Meanwhile, the city will require the Ridgeview recreational vehicle park and six Sunridge area homeown-

ers to connect to sewer within three months.

They have been singled out because sewer lines are right next to their property. The council meeting to address the sewer connection rule has not been scheduled.

7-18-02

Jacqueline E. Schafer
Director, ADEQ
State of Arizona
3033 N. Central Ave.
Phoenix AZ 85012

Subj: Attached copy of
Memo from City Attorney
to staff.

Dear Ms. Schafer:

Re: subject memo, if I understand paragraph four (4) correctly, per the consent decree the City should not amend any sewer ordinances without first getting ADEQ approval.

Not only has the City Council made amendments in the recent past, at their meeting of 7-9-02, they also instructed staff to make additional amendments. Have these amendments been submitted to and approved by ADEQ?

Also, regardless of what Mr. Graf may have been told, the newspaper did not mis-state what was said and done at the meeting. I will see if I can get a copy of the minutes or a copy of the video tape of the meeting.

You need to understand, this Council will not do anything to individuals that is unpopular. Telling individuals that are within 300' or 500' of a sewer line to hook up is unpopular. That is why the large list of people that should hook up are not hooked up.

For the record, the list of properties within 300' or 500' I recently sent you has been basically the same for at least three years and none of the properties have been notified to hook up.

Isn't this lack of enforcement a violation of the consent decree between ADEQ and the City?

Isn't this lack of enforcement by ADEQ in not making the City follow their enforcement ordinances a violation of the consent decree between ADEQ and the Sierra Club?

As a person who is concerned about protecting our groundwater, I can only tell you about the actions I see and hear from our Council and upper management staff.

It is clear to anyone who is watching that they are only concerned with their political standing and are not in any way concerned with the environmental issues.

It is also clear they believe they have the power to make all the decisions as they want them, not as the environment might dictate or as the consent decree may state.

Sincerely,

A Concerned City Employee

cc: Karen L. Smith, Director
Water Quality Division
ADEQ
3033 North Central
Phoenix AZ 85012

cc: Chuck Graf
Deputy Director, Water Quality Div.
ADEQ
3033 North Central
Phoenix AZ 85012

cc: Mike Traubert
Section Manager, Compliance
ADEQ
3033 North Central
Phoenix AZ 85012

cc: Laurie Woodall
Assistant Attorney General
State of Arizona
1275 W Washington
Phoenix AZ 85007



City Attorney Staff Memo

Friday, July 12, 2002

**Modifications to Sewer Connection Ordinance Provisions
in BHC Code**

The council workshop this week on enforcement of the 300/500' connection sections of the sewer code resulted in several recommendations for staff on revisions to accommodate hardships for residential properties, waiver for properties that are under an existing or planned SID, and addressing commercial users separately from residential as to payback agreements.

While our engineer is revising various sections of the sewer code for the next workshop, there are some preliminary legal observations that may help, particularly with the immediate need to commence the Easy Street extension for the McDonald property.

1. *City Authority to Initiate or Pay for Extensions.* Present BHC Code §§ 13.08.390/.400 anticipate main line extensions for distant "new developments" by developers, or those that are "relatively short" extensions requested by "customers." In both cases, the users could be either residential or commercial, and the provisions are set up with payback agreements to reimburse the applicant from connection fees from "intervening property owners" or "parties abutting the extension and proposing to connect to the sewer system". If these extensions are made, then the mandatory hookup provisions of § 13.08.070.D could apply (though these sections also allow for line extension agreements for intervening properties, and there give a 1-year waiver if the engineer determines that the extension "would not provide proper routing"). This scheme leaves open the following questions:
 - Can the City initiate an extension without waiting for an applicant?
 - If the City does a mainline extension, does that also include the ability, outside an SID, to force hookups and payment by the user?

- Can the City pay for an extension requested by an applicant who cannot finance the improvement and wait for later hookups?

My research has not resulted in any clear authority for the City on these questions. **ARS 48-572.A.4** states a municipality has the ability to "order construction, reconstruction or acquisition of sewers...on any land of the municipality or R/W granted or obtained for such purpose", but does not continue that such authority allows mandatory connection or imposition of construction costs on adjoining properties. Parallel provisions in the ACC regulations on sewer utilities (**R14-2-605/606**) also are worded in terms of an applicant initiating the service extensions, and not the utility first extending and then seeking repayments.

In *City of Sierra Vista vs. Cochise Enterprises, Inc.*, 144 Ariz. 375, 697 P.2d 1125 (1984) the court held that the city could require a developer to connect to city sewer system at developer's expense where, under statutes, the city could have required the formation of sewer district and assessed the developer for the cost of sewer lines. "The construction, maintenance and repair of sewers may be provided by ordinances and sustained as a valid exercise of the police power in the interest of public health... and an ordinance requiring property owners to make connections therewith is also a valid exercise of police power. The city can require those persons benefited by sewer lines to share in the cost of their construction." While this is broad language, keep in mind it came from a factual context where there was a consensual development of a subdivision, not a simple line extension initiated by the city. Nevertheless, the use of police power of the municipality is probably the best grounding for the mandatory connection ordinances.

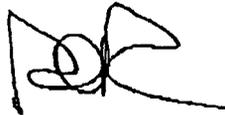
My conclusion is that we have enough legal authority outside the present BHC Code sewer provisions to go ahead and make the Easy Street extension using city funding, and then revise the Code later to add provisions showing we have the same discretion in the future for other line extensions, with approval of the council. I discussed the issue with the town attorney for Prescott Valley, where they have an even stronger connection ordinance, and he feels there is enough general authority for a municipality under the 9-240 or the 48 code to proceed, plus the police powers as discussed in *Sierra Vista* (which was his suggestion to review).

Some suggestions on our revisions of this section of the sewer code are to make the terms consistent (there are several uses of "consumer" with no definition), address different payback terms for residential than commercial (and maybe even further variations for RV parks), clarify exactly who pays for the laterals [PV decided to pay for the whole service line, laterals and on-lot/septic abandonment in exchange for a construction easement to make sure there was a legal basis for expending public funds, and paid for this from federal grants and general fund], and also determine whether the 300/500 distance means to the main, or only a lateral or lift station that is nearby.

2. *McCormick Extension Over 1,000 Feet.* We received a letter this week from a homeowner who will be impacted by the McCormick line extension agreement challenging the project on the basis that it exceeds 1000 feet (BHC Code § states that these are "relatively short sewer line extensions, less than 1000 feet, which do not ...[involve an increase to the main line diameter] or serve a major development"). I think his issue is moot since his property is within the presumptive 1000-foot limit anyway, but perhaps the section could be re-written to remove any set length. Again, the general police power would be a fall-back authority separate from § 13.08.400.
3. *Waiver of Connection Requirement by Ordinance No.2001-09.* I think this amendment from last July has been mis-read as requiring the city to put in the laterals to the property lines before the mandatory connection section applies. All 2001-09 did was clarify that **maintenance** of the lines is divided between the property owner on private property and the city when within public roads or R/W – it did not address the **construction** of lines. In addition, the amendment left untouched the language of the provisions of the mandatory connection in §13.08.070.D.1.c, which states that "all costs associated with the abandonment and connection to the city's sanitary sewer system shall be paid for by the property owner." Though 2001-09 revised "sewer connection" to mean "connection to the SEWER LATERAL AT THE PROPERTY LINE", this is at best vague and creates a conflict with the above subsection. Also, 2001-09 did not change the payback provisions in the line extension agreements, where the costs of the main extension, laterals, and related equipment is assessed back on a lineal foot basis to the

property owners who later connect. The question of who pays for what part of the extension is therefore very much still open.

4. *Modifications to the Sewer Ordinance and the Consent Decree.* Section IV.2.c of the decree requires submittal of BHC's "fees and ordinances relating to sewage treatment" to ADEQ for approval, and "these ordinances shall cover, at a minimum, connection criteria, industrial criteria, and enforcement." I would assume that this would apply to any revisions to the connection requirements since this is a critical part of compliance. In a phone call today with Chuck Graff/ADEQ, who was concerned about the July 11th article headlined "Bullhead City Won't Enforce Sewer Connection Rule", Dan and I explained that this was mis-stated, that we are simply revising the rule to accommodate the residential/commercial user distinctions and those owners who may already be in SIDs. He referred to the above decree provisions, and also related that the ADEQ connection rule (probably the model for ours, but with the 400' limit) is undergoing "technical revision" to allow more flexible application when cities have similar but sufficient connection provisions. I asked for a letter from his office confirming the application of the decree provisions, and, when available, copies of the revised ADEQ rule to make sure we are modifying our code correctly.

A handwritten signature in black ink, appearing to be the initials 'DK' or similar, written in a cursive style.

7-17-02

Jacqueline E. Schafer
Director, ADEQ
State of Arizona
3033 N. Central Ave.
Phoenix AZ 85012

Subj: Consent Decree between
City of Bullhead City and
ADEQ - DV97-09626
ADEQ Engineering file 00-E-031

Dear Ms. Schafer:

I am a City of Bullhead City employee and am writing you regarding the above subject because of my concern about our City management and City Council's actions regarding not enforcing the intent of the subject consent decree and/or our 208 Plan and City sewer ordinances.

My concerns are as follows:

Priorities listed on the consent decree:

The consent decrees attachment "B" clearly shows the Tierra Grande and Sunridge subdivision areas of the City being priority #3. However, the City has recently defined the Arroyo Vista Estates subdivision as priority #3.

The Arroyo Vista Estates Homeowners Association, who are well organized and well funded, have protested this priority ranking noting that they are not necessarily against sewers, however, they are definitely against being #3 when in fact two other areas were defined as the priority #3 areas in the consent decree. The Council under pressure recently agreed to a meeting with the Arroyo Vista people on 7-31-02. Enclosed please find information submitted by the Arroyo Vista Estates Homeowners Association. Please note that some of us staff members have been told by friends in Arroyo Vista that if the priority is not changed that they plan to sue the City as well as ADEQ for not following the consent decree.

Enforcing the 208 Plan & City Ordinances:

Our 208 Plan and our City ordinance clearly state that any residential structure within 300' and any commercial structure within 500' of an existing sewer line connecting to a plant with capacity, must hook up to sewer. Until recently staff kept it hidden that they were not enforcing the 208 and ordinance, however, it is now out in the open. Enclosed please find a copy of the Council Agenda for 7-9-02, including a City Council requested, staff prepared, listing of all properties within the 300' or 500' which should be forced to hook up. Also enclosed is a newspaper article clearly showing the council actions.

Isn't this type of action clearly against the intent of the consent decree?

Some of us on staff are concerned how we are expected to explain that we are forcing certain areas into sewer improvement districts (SID's) while we are doing nothing to force hook ups where sewer is already available.

Staff is also getting tired of being told we can't have requested items that are needed in our departments because the enterprise fund (sewer) is losing one million dollars a year when the City Management and Council are not doing what is required to implement the procedures which would put the fund in the black.

I can understand the enterprise fund is not an Attorney General or ADEQ problem, however, I believe the other items are of utmost importance to both of you especially if the Arroyo Vista homeowners proceed with a protest and/or lawsuit.

Many of us on staff know how to implement all ordinances, even the "unpopular" ones. However, we must question the Manager, Engineer, Finance Director and Council actions. If my concerns expressed above are correct, those of us who know better hope you will be able to correct Council and management's direction.

Sincerely,

A concerned City employee.

P.S. Regardless of what they may have been telling you, the City Manager, Dan Dible, City Engineer, Pawan Agrawal, and Finance Director, Gayle Whittle, have all known they were not enforcing the 208 and/or ordinance as written.

Karen L. Smith, Director
Water Quality Division
ADEQ
3033 North Central
Phoenix AZ 85012

CITY OF BULLHEAD CITY
Memorandum

DATE: July 3, 2002

TO: Dan Dible, City Manager

FROM: Pawan Agrawal, CDD/City Engineer PPA

SUBJECT: 300'/500'

Attached is the latest version of our 300'/500' property list. I recommend that we agendize an item for Council to give the necessary direction on enforcement. An interpretation of Ordinance 2001-09 will be needed from the City Attorney prior to the Council meeting. As you may recall, prior to the adoption of Ordinance 2001-09 customers were responsible for extending and maintaining their sewer service line up to the sewer main. However the adoption of Ordinance 2001-09 resulted in some confusion as it made the City responsible for maintenance of all lines in City Right-of-way/Public Utility Easements. Customers were given the impression that this Ordinance means the City is now responsible for installation of service lines up to the property line and in some instances the City has done so. However, the Ordinance does not seem to say anything about installation, it only addresses maintenance. My questions are:

- 1) Is the City responsible for the service line installation up to the property line;
- 2) If there is no service line to the property line, then does the 300'/500' connection requirements of 13.08.070 apply;
- 3) If the main is within 300'/500' and not fronting a property does that mean the property owner will have to extend the main and provide the service line.

Prior to the adoption of Ordinance 2001-09 I would have answered the first question as no, and the other two as yes. Based on that we could have sent the 90 day notices to all the properties on the attached list. However, after the adoption of Ordinance 2001-09, I am unsure. Until these questions are answered I feel we can only send 90 day notices to properties that have a service line to their property line.

There are only 5 residential properties with service lines to property line and 90 day connect letters were mailed to all of them. Additional service lines are provided upon request, but the City has not forced residential customers into the 90 day situation by installing service lines. In the past there was no fee for the

installation of a service line by the City. Staff recently added this fee at actual cost to the comprehensive fee schedule. Service lines have been required when developers or the City extend main lines for their own benefit and in those situations we will send more 90 day letters. Some of the imminent projects that belong in this category are Sunbonnet area (11 homes), Locust area (about 6 homes), Arcadia area (14 homes). The City will continue to install service lines each time the main is extended, but should we continue to force developers to install service lines when main line is extended.

Our code has an exception for the customers that are in the service area of Sunridge (interim) plant that restricts us from enforcing the 300'/500' requirements on them until the Sunridge area flows are routed to a permanent plant. When the Sunridge plant is taken off-line (hopefully any day), we can send 90 day letters to 6 homes that have a service line in Sunridge (interim) plant service area.

We have not enforced the 90 day connection requirement on any residential property without the service line since the time the City became responsible for the maintenance of the service lines due to the confusion associated with the Ordinance 2001-09.

No commercial property exists with a service line that we can enforce 90 day connect requirements on. As you can see from the attached sheet, we can get several commercial properties to connect if we can send the 90 day notices to properties within 500 feet, but without the service line. Several pay as you go line extension projects are feasible for properties more than 500 feet away upon approval of the City Attorney on the issue of reimbursement of line extension costs. Fiesta RV park is not listed on the attached list as they are over 500 feet from sewer at this time, but the Rainbow Drive sewer project will add them on this list along with all the commercial area in the vicinity of Easy and Friendly Streets.

Cc: Gayle White, Finance Director
Toby Cofer, Asst to City Manager/PIO
Ron Ramsey, City Attorney
Paula Shreves, Utilities Division

Bullhead City won't enforce sewer connection rule

By COLBY UNDERWOOD

The Daily News

BULLHEAD CITY — The city won't enforce its rule on sewer connections.

The rule requires homes within 300 feet of a sewer line be connected to sewer. It also requires businesses within 500 feet be connected to it.

"The last time we tried to enforce this en masse, we were besieged by the neighborhood," said Councilman Don Sullivan during a Council meeting Tuesday.

The rule no longer works because it puts an "undue burden" on homeowners, he said. Councilman Franz Bruck wants homeowners to pay the smallest possible price for sewer connection.

That could require homeowners to join "improvement districts," which attract low-interest loans for sewer work. Or it could require the city to bring sewer lines to homeowners' property, then have homeowners pay only for work on their lots.

Bruck seems less concerned about the cost to businesses. "I don't feel we should enforce (the 300-foot rule) on residential property," he said. "There is no great human cry from commercial property. Presumably a business has a greater ability to borrow money to do a connection."

Bruck wants to address businesses on a "case by case basis. If we talk about Walmart or Home Depot or some big business that wants to

move in, then I don't feel they deserve as big of a break," he said. "But when you talk about mom and pop stores, they don't have the recourse of these larger businesses. We have to accommodate the smaller businesses so we don't put an undue hardship on them."

Diane Valentine may be the only Council member wanting to enforce the rule. Homeowners need to connect to sewer so that the city sewer system has more customers, according to Valentine.

Customers' fees go into the city's "enterprise fund," which Valentine said is supposed to be profitable.

"We are just going in the hole," she said. Councilman Jack Hakim's

main problem with the 300-foot rule is it keeps changing. Tuesday's meeting was called because city officials thought the rule was vague and needed to be changed.

"This will be the third time that this will be changed," Hakim said. "What are we going to do next year? Are we going to change it again? Then the next year, are we going to change it again? I don't want anymore vagueness or hear the word 'vagueness' again."

The Council made no official decision Tuesday on the rule.

"Do you have enough information to kind of see where we need to be going?" Mayor Diane Vick asked city Manager Dan Dible. Dible said yes.

CITY OF BULLHEAD CITY



DATE: MARCH 19, 1997

MEMORANDUM

TO: ROBERT E. RUHL, PUBLIC WORKS DIRECTOR

FROM: HARRY HERMAN, ASSISTANT PUBLIC WORKS DIRECTOR *H.H.*

SUBJECT: SUNRIDGE SEWAGE SPILL MARCH 18, 1997

Today, March 18, 1997, Petie received a call that reported a main line manhole over flowing and discharging raw sewage on the surface of a drainage way southwest of Sunridge Hotel prior to Stone Ridge Apartments.

Upon investigation we found the manhole lid off a manhole that is down stream from the manhole over flowing, the lid was approximately ten (10) feet away from the manhole. This manhole was full of large and small rock, creating the stoppage. A vac truck was dispatched to site and removed the greater percentage of rock, allowing the stoppage to drain through the system.

After the flows reduced, crew entered the manhole and removed the existing extra large boulder's from invert. John McCormick who is Sunridge Estates Developer claims he reported this condition 2 days prior to Paula, Community Development Inspection Division) and that she told him to call Section 10 Wastewater Plant. John said he called the plant and left a message on there answering machine.

This information was gathered by me, by visiting John at his office today, March 18, 1997, I told John that from now on any emergency of this nature shall be reported to 9-1-1 to secure report delivery. John claimed that our Wastewater personnel received the message prior to me receiving same and he showed them the location.

While I was visiting John regarding this subject, our personnel were addressing the problem. The spillage was minor, and I instructed Ken Robinson to report the spillage to A.D.E.Q. (Flagstaff Office.)

I asked if our personnel had taken pictures of the subject and he said they did not. This condition should be monitored by photo's when arriving at such a site condition. It is our opinion that no small children removed the lid from that particular manhole. We have reason to believe that this was done on purpose but we could be wrong.

cc: James V. Thompson, City Manager
Ken Robinson, Wastewater Superintendent
Paula Shreves, Engineering Inspector

Ken Robinson

NOTIFICATION MEMORANDUM

DISTRIBUTED
1/30/96 A

Mail TO: Manager, Surface Water Enforcement Unit
Arizona Department of Environmental Quality
3033 North Central Avenue
Phoenix, AZ 85012-2809

Date: 2-24-96

RECEIVED
JAN 02 1997
BY: _____

From: Bullhead City Wastewater Dept.

Re: **UNAUTHORIZED SEWAGE SPILL/DISCHARGE REPORT**

WWTF/System Name: See 10 WWTs ; WWS Id. No.: 58-012

Contact Name: Ken Robinson Contact phone #: 520-763-7299

This will inform the Department of an unauthorized sewage spill/dischARGE which occurred from the collection system for the referenced facility/system or as specified below:

Date(s): 12-24-95 Known Time (from-to): 9⁰⁰ AM - 10¹⁵ AM

Location(s): 776 Ramon Road, Bullhead City, AZ

Discharge reached "waters of the U.S." ? no / yes (name of receiving stream) _____

Was the U.S. EPA notified of the spill (required, if it reached "waters of the U.S.") yes no

Approximate volume of discharge (#gallons discharged): 25 gallons

When and how did you become aware of the discharge? By Routine observation of the line

The cause of the discharge/determined by: Digging up the line

Remedial/Mitigative/Corrective Actions: Dig up line and installing a repair clamp. Remove contaminated soil and back fill with road base

CC:000:SPILNOTI(rev:11/95)

cc: _____ Environmental Engineer Specialist
Surface Water Field Services Unit, Surface Water Section, Water Quality Division, ADEC

ARIZONA STATE LAWS

ON

ENVIRONMENTAL NUISANCE

ON

AQUIFER WATER
QUALITY STANDARDS

ON

DISCHARGES
INTO THE
AQUIFER

49-202. Designation of state agency

A. The department is designated as the agency for this state for all purposes of the clean water act, including section 505, the resource conservation and recovery act, including section 7002, and the safe drinking water act. The department may take all actions necessary to administer and enforce these acts as provided in this section, including entering into contracts, grants and agreements, the adoption, modification or repeal of rules, and initiating administrative and judicial actions to secure to this state the benefits, rights and remedies of such acts.

B. The department shall process requests under section 401 of the clean water act for certification of permits required by section 404 of the clean water act in accordance with subsections C through H of this section. Subsections C and D, subsection E, paragraph 3, subsection F, paragraph 3 and subsection H of this section apply to the certification of nationwide or general permits issued under section 404 of the clean water act. If the department has denied or failed to act on certification of a nationwide permit or general permit, subsections C through H of this section apply to the certification of applications for or notices of coverage under those permits.

C. The department shall review the application for section 401 certification solely to determine whether the effect of the discharge will comply with the water quality standards for navigable waters established by department rules adopted pursuant to section 49-221, subsection A, and section 49-222. The department's review shall extend only to activities conducted within the ordinary high watermark of navigable waters. To the extent that any other standards are considered applicable pursuant to section 401(a)(1) of the clean water act, certification of these standards is waived.

D. The department may include only those conditions on certification under section 401 of the clean water act that are required to ensure compliance with the standards identified in subsection C of this section. The department may impose reporting and monitoring requirements as conditions of certification under section 401 of the clean water act only in accordance with department rules.

E. Until January 1, 1999:

1. The department may request supplemental information from the section 401 certification applicant if the information is necessary to make the certification determination pursuant to subsection C of this section. The department shall request this information in writing within thirty calendar days after receipt of the application for section 401 certification. The request shall specifically describe the information requested. Within fifteen calendar days after receipt of the applicant's written response to a request for supplemental information, the department shall either issue a written determination that the application is complete or request specific additional information. The applicant may deem any additional requests for supplemental information as a denial of certification for purposes of subsection H of this section. If the department fails to act within the time limits prescribed by this subsection, the application is deemed complete.

2. The department shall grant or deny section 401 certification and shall send a written notice of the department's decision to the applicant within thirty calendar days after receipt of a complete application for certification. Written notice of a denial of section 401 certification shall include a detailed description of the reasons for denial.

3. The department may waive its right to certification by giving written notice of that waiver to the applicant. The department's failure to grant or deny an application within the time limits prescribed by this section is deemed a waiver of certification pursuant to this subsection and section 401(a)(2) of the

clean water act.

F. Beginning January 1, 1999:

1. The department may request supplemental information from the section 401 certification applicant if the information is necessary to make the certification determination pursuant to subsection C of this section. The department shall request this information in writing. The request shall specifically describe the information requested. After receipt of the applicant's written response to a request for supplemental information, the department shall either issue a written determination that the application is complete or request specific additional information. The applicant may deem any additional requests for supplemental information as a denial of certification for purposes of subsection H of this section. In all other instances, the application is complete on submission of the information requested by the department.

2. The department shall grant or deny section 401 certification and shall send a written notice of the department's decision to the applicant after receipt of a complete application for certification. Written notice of a denial of section 401 certification shall include a detailed description of the reasons for denial.

3. The department may waive its right to certification by giving written notice of that waiver to the applicant. The department's failure to act on an application is deemed a waiver pursuant to this subsection and section 401(a)(2) of the clean water act.

G. The department shall adopt rules specifying the information the department requires an applicant to submit under this section in order to make the determination required by subsections C and D of this section. Until these rules are adopted, the department shall require an applicant to submit only the following information for certification under this section:

1. The name, address and telephone number of the applicant.

2. A description of the project to be certified, including an identification of the navigable waters in which the certified activities will occur.

3. The project location, including latitude, longitude and a legal description.

4. A United States geological service topographic map or other contour map of the project area, if available.

5. A map delineating the ordinary high watermark of navigable waters affected by the activity to be certified.

6. A description of any measures to be applied to the activities being certified in order to control the discharge of pollutants to navigable waters from those activities.

7. A description of the materials being discharged to or placed in navigable waters.

8. A copy of the application for a federal permit or license that is the subject of the requested certification.

H. Pursuant to title 41, chapter 6, article 10 an applicant for certification may appeal a denial of

certification or any conditions imposed on certification. Any person who is or may be adversely affected by the denial of or imposition of conditions on the certification of a nationwide or general permit may appeal that decision pursuant to title 41, chapter 6, article 10.

I. Certification under section 401 of the clean water act is automatically granted for quarrying, crushing and screening of nonmetallic minerals in ephemeral waters if all of the following conditions are satisfied within the ordinary high watermark of jurisdictional waters:

1. There is no disposal of construction and demolition wastes and contaminated wastewater.
2. Water for dust suppression, if used, does not contain contaminants that could violate water quality standards.
3. Pollution from the operation of equipment in the mining area is removed and properly disposed.
4. Stockpiles of processed materials containing ten per cent or more of particles of silt are placed or stabilized to minimize loss or erosion during flow events. As used in this paragraph, "silt" means particles finer than 0.0625 millimeter diameter on a dry weight basis.
5. Measures are implemented to minimize upstream and downstream scour during flood events to protect the integrity of buried pipelines.
6. On completion of quarrying operations in an area, areas denuded of shrubs and woody vegetation are revegetated to the maximum extent practicable.

J. For purposes of subsection I of this section, "ephemeral waters" means waters of the state that have been designated as ephemeral in rules adopted by the department.

K. Certification under section 401 of the clean water act is automatically granted for any license or permit required for:

1. Corrective actions taken pursuant to chapter 6, article 1 of this title in response to a release of a regulated substance as defined in section 49-1001 except for those off-site facilities that receive for treatment or disposal materials that are contaminated with a regulated substance and that are received as part of a corrective action.
2. Response or remedial actions undertaken pursuant to chapter 2, article 5 of this title or pursuant to CERCLA.
3. Corrective actions taken pursuant to chapter 5, article 1 of this title or the resource conservation recovery act of 1976, as amended (42 United States Code sections 6901 through 6992).
4. Other remedial actions that have been reviewed and approved by the appropriate government authority and taken pursuant to applicable federal or state laws.

L. The department of environmental quality is designated as the state water pollution control agency for this state for all purposes of CERCLA, except that the department of water resources has joint authority with the department of environmental quality to conduct feasibility studies and remedial investigations relating to groundwater quality and may enter into contracts and cooperative agreements under section 104 of CERCLA for such studies and remedial investigations. The department of environmental quality

may take all action necessary or appropriate to secure to this state the benefits of the act, and all such action shall be taken at the direction of the director of environmental quality as his duties are prescribed in this chapter.

M. The director and the department of environmental quality may enter into an interagency contract or agreement with the director of water resources under title 11, chapter 7, article 3 to implement the provisions of section 104 of CERCLA and to carry out the purposes of subsection L of this section.

49-141. Environmental nuisances

A. The director may take action under this section to abate environmental nuisances. As used in this section, an environmental nuisance is the creation or maintenance of a condition in the soil, air or water that causes or threatens to cause harm to the public health or the environment and that is not otherwise subject to regulation under this title. Subject to this limitation, the following conditions may constitute environmental nuisances:

1. A condition or place in populous areas which constitutes a breeding place for flies, rodents, mosquitoes and other insects which are capable of carrying and transmitting disease-causing organisms to any person or persons.
2. A place, condition or building which is controlled or operated by any governmental agency, state or local, and which is not maintained in a sanitary condition.
3. Sewage, human excreta, wastewater, garbage or other organic wastes deposited, stored, discharged or exposed so as to be a potential instrument or medium in the transmission of disease to or between any person or persons.
4. A vehicle or container which is used in the transportation of garbage or human excreta and which is defective and allows leakage or spillage of contents.
5. The maintenance of an overflowing septic tank or cesspool, the contents of which may be accessible to flies.
6. The pollution or contamination of any domestic waters.
7. The use of the contents of privies, cesspools, or septic tanks or the use of sewage or sewage plant effluents for fertilizing or irrigation purposes for crops or gardens except by specific approval of the department of health services or the department of environmental quality.
8. The storage, collection, transportation, disposal and reclamation of garbage, trash, rubbish, manure and other objectionable wastes other than as provided and authorized by law and rule.
9. Water, other than that used by irrigation, industrial or similar systems for nonpotable purposes, which is sold to the public, distributed to the public or used in production, processing, storing, handling, servicing or transportation of food and drink and which is unwholesome, poisonous or contains deleterious or foreign substances or filth or disease-causing substances or organisms.

B. The director may adopt rules that prescribe minimum standards for the prevention and abatement of environmental nuisances. In adopting rules pursuant to this subsection, the director shall incorporate the criteria set forth in section 49-282.06, subsection A and shall ensure that the nuisance is abated so that it will not recur.

49-223. Aquifer water quality standards

A. Primary drinking water maximum contaminant levels established by the administrator before August 13, 1986 are adopted as drinking water aquifer water quality standards. The director may only adopt additional aquifer water quality standards by rule. Within one year after the administrator establishes additional primary drinking water maximum contaminant levels, the director shall open a rule making docket pursuant to section 41-1021 for adoption of those maximum contaminant levels as drinking water aquifer water quality standards. If substantial opposition is demonstrated in the rule making docket regarding a particular constituent, the director may adopt for that constituent the maximum contaminant level as a drinking water aquifer water quality standard upon making a finding that this level is appropriate for adoption in Arizona as an aquifer water quality standard. In making this finding, the director shall consider whether the assumptions about technologies, costs, sampling and analytical methodologies and public health risk reduction used by the administrator in developing and implementing the maximum contaminant level are appropriate for establishing a drinking water aquifer water quality standard. For purposes of this subsection "substantial opposition" means information submitted to the director that explains with reasonable specificity why the maximum contaminant level is not appropriate as an aquifer water quality standard.

B. The director may adopt by rule numeric drinking water aquifer water quality standards for pollutants for which the administrator has not established primary drinking water maximum contaminant levels or for which a maximum contaminant level has been established but the director has determined it to be inappropriate as an aquifer water quality standard pursuant to subsection A of this section. These standards shall be based on the protection of human health. In establishing numeric drinking water aquifer water quality standards, the director shall rely on technical protocols appropriate for the development of aquifer water quality standards and shall base the standards on credible medical and toxicological evidence that has been subjected to peer review.

C. Any person may petition the director to adopt a numeric drinking water aquifer quality standard for any pollutant for which no drinking water aquifer quality standard exists. The director shall grant the petition and institute rule making proceedings adopting a numeric standard as provided under subsection B of this section within one hundred eighty days if the petition shows that the pollutant is a toxic pollutant, that the pollutant has been, or may in the future be, detected in any of the state's drinking water aquifers, and that there exists technical information on which a numeric standard might reasonably be based. Within one year of the commencement of the rule making proceeding, the director shall either adopt a numeric standard or make and publish a finding that, pursuant to subsection B of this section, the development of a numeric standard is not possible. The decision to not adopt a numeric standard shall, for purposes of judicial review, be treated in the same manner as a rule adopted pursuant to title 41, chapter 6.

D. For purposes of assessing compliance with each aquifer water quality standard adopted pursuant to this section, the director shall for purposes of articles 3 and 4 of this chapter, and may for purposes of other provisions of this title, identify sampling and analytical protocols appropriate for detecting and measuring the pollutant in the aquifers in the state.

E. Within one year from the reclassification of an aquifer to a non-drinking water status, pursuant to section 49-224, the director shall adopt water quality standards for that aquifer. For any pollutants which were not the basis for the reclassification, the applicable standard shall be identical with the standard for those pollutants adopted pursuant to subsections A and B of this section. For any pollutants which were the basis for reclassification, the standard shall be sufficient to achieve the purpose for which the aquifer was reclassified but shall minimize unnecessary degradation of the aquifer by taking into consideration the potential long-term uses of the aquifer and the short-term and long-term benefits of the activities

resulting in discharges into the aquifer.

F. The director shall adopt water quality standards for an aquifer for which a petition has been submitted pursuant to section 49-224, subsection D sufficient to achieve the non-drinking water use for which that aquifer was classified, taking into consideration the potential long-term uses of that aquifer and the short-term and long-term benefits of the discharging activities creating that aquifer.

G. In any action pursuant to this title, aquifer water quality protection provisions, including monitoring requirements, may be imposed only for pollutants for which aquifer water quality standards have been established that are likely to be present in a discharge. Indicator parameters and quality assurance parameters appropriate for such pollutants also may be specified.

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Toxic Substances Hydrology Program

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Target Compounds for National Reconnaissance of Emerging Contaminants in US Streams

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 Tylosin
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 Sulfamerazine
 Sulfamethazine
 Sulfathiazole
 Sulfadimethoxine
 Sulfamethiazole
 Sulfamethoxazole

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 Trimethoprim
 Carbadox
 Virginiamycin

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Metformin (antidiabetic agent)
 Cimetidine (antacid)
 Ranitidine (antacid)
 Enalaprilat (antihypertensive)
 Digoxin
 Diltiazem (antihypertensive)
 Fluoxetine (antidepressant)
 Paroxetine (antidepressant, antianxiety)
 Warfarin (anticoagulant)
 Salbutamol (antiasthmatic)
 Gemfibrozil (antihyperlipidemic)
 Dehydronifedipine (antianginal metabolite)
 Digoxigenin (digoxin metabolite)

Non-Prescription

Acetaminophen (analgesic)
 Ibuprofen (anti-inflammatory, analgesic)
 Codeine (analgesic)
 Caffeine (stimulant)
 1,7-Dimethylxanthine (caffeine metabolite)
 Cotinine (nicotine metabolite)

Industrial and Household Wastewater Products

Insecticides

Diazinon
 Carbaryl
 Chlorpyrifos
cis-Chlordane
 N,N-diethyltoluamide (DEET)
 Lindane
 Methyl parathion
 Dieldrin

Plasticizers

bis(2-Ethylhexyl)adipate
 Ethanol-2-butoxy-phosphate
bis(2-Ethylhexyl)phthalate
 Diethylphthalate
 Triphenyl phosphate

Detergent metabolites

p-Nonylphenol
 Nonylphenol monoethoxylate (NPEO1)
 Nonylphenol diethoxylate (NPEO2)
 Octylphenol monoethoxylate (OPEO1)
 Octylphenol diethoxylate (OPEO2)

Fire retardants

Tri(2-chloroethyl)phosphate
 Tri(dichlorisopropyl)phosphate

Polycyclic aromatic hydrocarbons (fossil fuel and fuel combustion indicators)

Naphthalene
 Phenanthrene
 Anthracene
 Fluoranthene
 Pyrene
 Benzo(a)pyrene

Antioxidants

2,6-di-tert-Butylphenol
 5-Methyl-1H-benzotriazole
 Butylatedhydroxyanisole (BHA)
 Butylatedhydroxytoluene (BHT)
 2,6-di-tert-Butyl-p-benzoquinor

Others

Tetrachloroethylene (solvent)
 Phenol (disinfectant)
 1,4-Dichlorobenzene (fumigant)
 Acetophenone (fragrance)
p-Cresol (wood preservative)
 Phthalic anhydride (used in plastics)
 Bisphenol A (used in polymers)
 Triclosan (antimicrobial disinfectant)

Sex and Steroidal Hormones

Biogenics

17 β -Estradiol
 17 α -Estradiol
 Estrone
 Estriol
 Testosterone
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cis-Androsterone

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17 α -Ethinylestradiol (ovulation inhibitor)
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 Equilenin (hormone replacement therap
 Equilin (hormone replacement therapy)

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List of Contaminants

As part of the Drinking Water and Health pages, this fact sheet is part of a larger publication:

National Primary Drinking Water Regulations

Technical Factsheet on: DIOXIN (2,3,7,8-TCDD)

Drinking Water Standards

MCLG: zero mg/L

MCL: 3×10^{-8} mg/L

HAL(child): 1 day: 1×10^{-6} mg/L; 10-day: 1×10^{-7} mg/L

Health Effects Summary

Acute: EPA has found dioxin to potentially cause the following health effects from acute exposures at levels above the MCL: liver damage, weight loss, atrophy of thymus gland and immunosuppression.

Drinking water levels which are considered "safe" for short-term exposures: For a 10-kg (22 lb.) child consuming 1 liter of water per day, a one-day exposure of 1×10^{-6} mg/L or a ten-day exposure to 1×10^{-7} mg/L.

Chronic: Dioxin has the potential to cause the following health effects from long-term exposures at levels above the MCL: variety of reproductive effects, from reduced fertility to birth defects.

Cancer: There is some evidence that dioxin may have the potential to cause cancer from a lifetime exposure at levels above the MCL.

Usage Patterns

Dioxin is not produced or used commercially in the US. It is a contaminant formed in the production of 2,4,5-trichlorophenol and of a few chlorinated herbicides such as silvex. It may also be formed during combustion of a variety of chlorinated organic compounds.

Dioxin has been tested for use in flameproofing polyesters and as an insecticide, but these uses were never exploited commercially.

Release Patterns

2,3,7,8-TCDD is released to the environment in stack emissions from the incineration of municipal refuse and certain chemical wastes, in exhaust from automobiles powered by leaded gasoline, in emissions from wood burning in the presence of chlorine, in accidental fires involving transformers containing PCBs and chlorinated benzenes, and from the improper disposal of certain chlorinated chemical wastes. TCDD has been released to the environment as a low level impurity in various pesticides (such as 2,4,5-T and derivatives) which were manufactured from 2,4,5-trichlorophenol.

Dioxin is not a listed chemical in the Toxics Release Inventory. Data on its incidental releases are not available.

Environmental Fate

Dioxin is one of the most toxic and environmentally stable tricyclic aromatic compounds of its structural class.

Due to its very low water solubility, most of the 2,3,7,8-TCDD occurring in water is expected to be associated with sediments or suspended material. Aquatic sediments may be an important, and ultimate, environmental sink for all global releases of TCDD. Two processes which may be able to remove TCDD from water are photolysis and volatilization.

The photolysis half-life at the water's surface has been estimated to range from 21 hr in summer to 118 hr in winter; however, these rates will increase significantly as water depth increases. Many bottom sediments may therefore not be susceptible to significant photodegradation.

The volatilization half-life from the water column of an environmental pond has been estimated to be 46 days; however, when the effects of adsorption to sediment are considered, the volatilization model predicts an overall volatilization removal half-life of over 50 years.

Various biological screening studies have demonstrated that TCDD is generally resistant to biodegradation. The persistence half-life of TCDD in lakes has been estimated to be in excess of 1.5 yr.

If released to soil, TCDD is not expected to leach. As a rule, the amount of TCDD detected more than 8 cm below the surface has been approximately 1/10 or less than that detected down to 8 cm. Being only slightly soluble in water, its migration in soil may have occurred along with soil colloids and particles to which it may have been bound. Soil cores collected from roadsides in Times Beach, MO in 1985 which had been sprayed with waste oils containing TCDD in the early 1970s indicated that most of the TCDD had remained in the upper 15 cm. A mean log K_{oc} of 7.39 was determined for ten contaminated soils from NJ and MO. Tests conducted by the USDA determined that vertical movement of 2,3,7,8-TCDD did not occur in a wide range of soil types.

Being only slightly soluble in water, its migration in soil may have occurred along with soil colloids and particles to which it may have been bound. Photodegradation on terrestrial surfaces may be an important transformation process. Volatilization from soil surfaces during warm conditions may be a major removal mechanism. The persistence half-life of TCDD on soil surfaces may vary from less than 1 yr to 3 yrs, but half-lives in soil interiors may be as long as 12 years. Screening studies have shown that TCDD is generally resistant to biodegradation.

If released to the atmosphere, vapor-phase TCDD may be degraded by reaction with hydroxyl radicals and direct photolysis. Particulate-phase TCDD may be physically removed from air by wet and dry deposition.

Bioconcentration in aquatic organisms has been demonstrated. Mean bioconcentration factors (BCF) of 29,200 (dry wt) and 5,840 (wet wt) were measured for fathead minnows over a 28 day exposure; the elimination half-life after exposure was found to be 14.5 days. Log BCFs of approximately 3.2 to 3.9 were determined for rainbow trout and fathead minnow in laboratory flow-through studies during 4-5 exposures. The following log BCFs have been reported for various aquatic organisms: snails, fish (*Gambusia*), daphnia 4.3-4.4; duckweed, algae, catfish, 3.6-3.95.

The major route of exposure to the general population results from incineration processes and exhausts from leaded gasoline engines.

Chemical/ Physical Properties

CAS Number: 1746-01-6

Color/ Form/Odor: White crystalline needles

M.P.: 305-306 C B.P.: N/A

Vapor Pressure: 7.4×10^{-4} mm Hg, 25 C

Density/Spec. Grav.: N/A

Octanol/Water Partition (Kow): Log Kow = 6.8

Solubility: 19.3 ng/L of water at 25 C; Insoluble in water

Soil sorption coefficient: Koc-N/A; very low mobility in soil

Odor/Taste Thresholds: N/A

Bioconcentration Factor: 3.2 to 3.9 in fish; expected to bioconcentrate in aquatic organisms.

Henry's Law Coefficient: 1.62×10^{-5} atm-cu m/mole;

Trade Names/Synonyms: 2,3,7,8-Tetrachlorodibenzo-1,4-dioxin;
Dioxin; Tetradoxin;

Other Regulatory Information

Monitoring For Ground/Surface Water Sources:

Initial Frequency- 4 quarterly samples every 3 years
Repeat Frequency- If no detections during initial round:
 2 quarterly per year if serving >3300 persons;
 1 sample per 3 years for smaller systems
Triggers - Return to Initial Freq. if detect at > 5 ng/L

Analysis:

Reference Source Method Numbers

EPA 821-B-94-005 1613

Treatment- Best Available Technologies:
Granular Activated Charcoal

For Additional Information:

EPA can provide further regulatory and other general information:
EPA Safe Drinking Water Hotline - 800/426-4791

Other sources of toxicological and environmental fate data include:
Toxic Substance Control Act Information Line - 202/554-1404
Toxics Release Inventory, National Library of Medicine - 301/496-6531
Agency for Toxic Substances and Disease Registry - 404/639-6000

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the Safe Drinking Water Act

[the Act](#)

[1996 Amendments](#)

[SDWA's 25th Anniversary](#)

[SDWA Requirements](#)



The **Safe Drinking Water Act (SDWA)**, which celebrated its 25th anniversary in 1999, is the main federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. To learn more about the Safe Drinking Water Act:

- [read our short summary of the Act](#) [PDF file]
 - [search SDWA online](#) [EXIT EPA →](#), or
 - [download a 6.7 M text file](#) [EXIT EPA →](#)
- (Note: SDWA is included in 'Chapter 6A - Public Health Service' / section 300f)

In 1996, Congress amended the Safe Drinking Water Act to emphasize sound science and risk-based standard setting, small water supply system flexibility and technical assistance, community-empowered source water assessment and protection, public right-to-know, and water system infrastructure assistance through a multi-billion-dollar state revolving loan fund. For more detailed information, read:

- [Section-by-section summary](#),
- [Thematic summary](#), or
- [Full text of the 1996 SDWA Amendments](#).
- [The Safe Drinking Water Act - One Year Later - Success in Advancing Public Health Protection](#) (EPA 810-F-97-002, September 1997)

In 1999, EPA and its partners celebrated the **25th Anniversary of SDWA** by looking backwards over the successes of the past 25 years and forward to the challenges of the next 25. Among the products of the 25th anniversary commemoration are:

- [25 Years of the Safe Drinking Water Act: History and Trends](#) (EPA 816-R-99-007, December 1999)

2 0 0 1	
January 1, 2001	Promulgate <u>final standard for arsenic</u>
February 2001	<u>2nd Needs Survey Report to Congress</u>
	<u>2nd Needs Survey for Indian Tribes</u>
	<u>Determine State compliance with operator certification guidelines for purposes of DWSRF withholding</u>
June 2001	Promulgate a regulation for <u>filter backwash recycling</u> within the treatment process of a PWS, unless addressed in SWTR
August 2001	Make determinations of whether or not to regulate at least 5 contaminants from contaminant candidate list
	(STATES) Report to EPA on success of enforcement mechanisms and assistance efforts in capacity development
November 2001	(STATES) Complete local source water assessments
With FY 2003 Budget	Report to Congress -- Evaluation of effectiveness of State DWSRF loan funds
2 0 0 2	
May 2002	Promulgate Stage II Disinfection Byproducts Rule
	Promulgate LT2 Enhanced Surface Water Treatment Rule (EPA schedule)
	Promulgate Phase II rule on UIC Class V wells
September 2002	(STATES) Submit publicly-available report to Governors on efficacy of State capacity development strategy and progress in implementation
2 0 0 3	
May 2003	(STATES) Extension deadline for States to complete local source water assessments
August 2003	Propose MCLG and national primary drinking water regulation for any contaminant selected for regulation from contaminant candidate list
2 0 0 5	
February 2005	Final MCLG and rule for any contaminant selected for regulation from contaminant candidate list
	3rd Drinking Water Needs Survey for States and Tribes

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Environ. Sci. Technol., 36 (6), 1202 -1211, 2002. 10.1021/es011055j S0013-936X(01)01055-0

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Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance

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Received for review June 12, 2001

Revised manuscript received November 26, 2001

Accepted December 12, 2001

Abstract:

<http://pubs.acs.org/cgi-bin/jtextd?esthag/36/6/html/es011055j.html>

3/15/02

To provide the first nationwide reconnaissance of the occurrence of pharmaceuticals, hormones, and other organic wastewater contaminants (OWCs) in water resources, the U.S. Geological Survey used five newly developed analytical methods to measure concentrations of 95 OWCs in water samples from a network of 139 streams across 30 states during 1999 and 2000. The selection of sampling sites was biased toward streams susceptible to contamination (i.e. downstream of intense urbanization and livestock production). OWCs were prevalent during this study, being found in 80% of the streams sampled. The compounds detected represent a wide range of residential, industrial, and agricultural origins and uses with 82 of the 95 OWCs being found during this study. The most frequently detected compounds were coprostanol (fecal steroid), cholesterol (plant and animal steroid), *N,N*-diethyltoluamide (insect repellent), caffeine (stimulant), triclosan (antimicrobial disinfectant), tri(2-chloroethyl)phosphate (fire retardant), and 4-nonylphenol (nonionic detergent metabolite). Measured concentrations for this study were generally low and rarely exceeded drinking-water guidelines, drinking-water health advisories, or aquatic-life criteria. Many compounds, however, do not have such guidelines established. The detection of multiple OWCs was common for this study, with a median of seven and as many as 38 OWCs being found in a given water sample. Little is known about the potential interactive effects (such as synergistic or antagonistic toxicity) that may occur from complex mixtures of OWCs in the environment. In addition, results of this study demonstrate the importance of obtaining data on metabolites to fully understand not only the fate and transport of OWCs in the hydrologic system but also their ultimate overall effect on human health and the environment.

Introduction

The continued exponential growth in human population has created a corresponding increase in the demand for the Earth's limited supply of freshwater. Thus, protecting the integrity of our water resources is one of the most essential environmental issues of the 21st century. Recent decades have brought increasing concerns for potential adverse human and ecological health effects resulting from the production, use, and disposal of numerous chemicals that offer improvements in industry, agriculture, medical treatment, and even common household conveniences (1). Research has shown that many such compounds can enter the environment, disperse, and persist to a greater extent than first anticipated. Some compounds, such as pesticides, are intentionally released in measured applications. Others, such as industrial byproducts, are released through regulated and unregulated industrial discharges to water and air resources. Household chemicals, pharmaceuticals, and other consumables as well as biogenic hormones are released directly to the environment after passing through wastewater treatment processes (via wastewater treatment plants, or domestic septic systems), which often are not designed to remove them from the effluent (2). Veterinary pharmaceuticals used in animal feeding operations may be released to the environment with animal wastes through overflow or leakage from storage structures or land application (3). As a result, there are a wide variety of transport pathways for many different chemicals to enter and persist in environmental waters.

Surprisingly, little is known about the extent of environmental occurrence, transport, and ultimate fate of many synthetic organic chemicals after their intended use, particularly hormonally active chemicals (4), personal care products, and pharmaceuticals that are designed to stimulate a physiological response in humans, plants, and animals (1, 5). One reason for this general lack of data is that, until recently, there have been few analytical methods capable of detecting these compounds at low concentrations which might be expected in the environment (6). Potential concerns from the environmental presence of these compounds include abnormal physiological processes and

reproductive impairment (7-12), increased incidences of cancer (13), the development of antibiotic-resistant bacteria (14-17), and the potential increased toxicity of chemical mixtures (18). For many substances, the potential effects on humans and aquatic ecosystems are not clearly understood (1, 2, 19).

The primary objective of this study is to provide the first nationwide reconnaissance of the occurrence of a broad suite of 95 organic wastewater contaminants (OWCs), including many compounds of emerging environmental concern, in streams across the United States. These OWCs are potentially associated with human, industrial, and agricultural wastewaters and include antibiotics, other prescription drugs, nonprescription drugs, steroids, reproductive hormones, personal care products, products of oil use and combustion, and other extensively used chemicals. The target OWCs were selected because they are expected to enter the environment through common wastewater pathways, are used in significant quantities, may have human or environmental health implications, are representative or potential indicators of certain classes of compounds or sources, and/or can be accurately measured in environmental samples using available technologies. Although these 95 OWCs are just a small subset of compounds being used by society, they represent a *starting point* for this investigation examining the transport of OWCs to water resources of the United States.

This paper describes the analytical results available from 139 streams sampled during 1999-2000 (Figure 1). The results are intended to determine if OWCs are entering U.S. streams and to estimate the extent of their co-occurrence in susceptible waters. In addition, this study provides a focal point for the development and testing of new laboratory methods for measuring OWCs in environmental samples at trace levels, an interpretive context for future assessments of OWCs, and a means for establishing research priorities and future monitoring strategies. More complete interpretations, including an evaluation of the role of potential sources of contamination, will follow in subsequent papers.

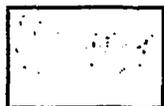


Figure 1 Location of 139 stream sampling sites.

Site Selection and Sampling

Little data were available on the occurrence of most of the targeted OWCs in U.S. streams at the onset of this investigation. Therefore, the selection of sampling sites primarily focused on areas considered susceptible to contamination from human, industrial, and agricultural wastewater. The 139 stream sites sampled during 1999-2000 (Figure 1) represent a wide range of geography, hydrogeology, land use, climate, and basin size. Specific information on the individual sampling sites is provided elsewhere (20).

All samples were collected by U.S. Geological Survey personnel using consistent protocols and procedures designed to obtain a sample representative of the streamwaters using standard depth and width integrating techniques (21). At each site, a composite water sample was collected from about 4-6 vertical profiles which was split into appropriate containers for shipment to the participating laboratories. For those bottles requiring filtration, water was passed through a 0.7 μ m, baked, glass-fiber filter in the field where possible, or else filtration was conducted in the laboratory. Water samples for each chemical analysis were stored in precleaned-amber, glass bottles and collected in duplicate. The duplicate samples were used for backup purposes (in case of breakage of the primary sample) and

for laboratory replicates. Following collection, samples were immediately chilled and sent to the laboratory. To minimize contamination of samples, use of personal care items (i.e. insect repellents, colognes, perfumes), caffeinated products, and tobacco were discouraged during sample collection and processing.

Each stream site was sampled once during the 1999-2000 study period. Samples collected in 1999 were analyzed for a subset of the OWCs based on the watershed land-use characteristics. Samples collected in 2000 were analyzed for the complete suite of OWCs. The analytical results for each stream sample are available elsewhere (20).

Analytical Methods

To determine the environmental extent of 95 OWCs (Table 1) in susceptible streams, five separate analytical methods were used. Each method was developed independently in different laboratories, with somewhat different data objectives, such as identifying hormones versus identifying antibiotics. As a result of these differing objectives, varying approaches were used in the development of the five analytical methods. For example, select methods (Methods 1-3 below) used filtered water for solid-phase extraction (SPE) with liquid chromatography/mass spectrometry positive-ion electrospray (LC/MS-ESI(+)) analysis, while others (Methods 4 and 5 below) used whole-water continuous liquid-liquid extraction (CLLE) with capillary gas chromatography/mass spectrometry (GC/MS) analysis.

All methods use selected ion monitoring (SIM) for improved sensitivity, thus, only the target compounds were reported with no attempt to report data for nontarget compounds. Target compounds within each method were selected from the large number of chemical possibilities based upon usage, toxicity, potential hormonal activity, and persistence in the environment. Some compounds that fit the above criteria, however, could not be included (such as amoxicillin, roxarsone, polybrominated diphenyl ethers) because they were either incompatible with the corresponding method or reference standards were not available. Positive identification of a compound required elution within the expected retention time window. In addition, the sample spectra and ion abundance ratios were required to match that of the reference standard compounds. The base-peak ion was used for quantitation, and, if possible, two qualifier ions were used for confirmation. After qualitative criteria were met, compound concentrations were calculated from 5 to 8 point calibration curves (generally from 0.01 to 10.0 $\mu\text{g/L}$) using internal standard quantitation. Methods 1 and 2 process calibration standards through the extraction procedure, which generally corrects concentrations for method losses but not matrix effects. Methods 3-5 do not extract calibration standards, thus the reported concentrations are not corrected for method losses. Reporting levels (RLs) were determined for each method by either an evaluation of instrument response, calculation of limit of detection, or from a previously published procedure (25). RLs were adjusted based on experience with the compounds in each method, known interferences, or known recovery problems.

The following descriptions are intended to provide a brief overview of the five analytical methods used for this study. More comprehensive method descriptions are provided elsewhere (26-28) or will be available in subsequent publications.

Method 1. This method targets 21 antibiotic compounds (Table 1) in 500-mL filtered water samples using modifications from previously described methods (26, 29). The antibiotics were extracted and analyzed by tandem SPE and single quadrupole, LC/MS-ESI(+) using SIM. To prevent the tetracycline antibiotics from complexing with Ca^{2+} and Mg^{2+} ions and residual metals on the SPE cartridges, 0.5 mg of disodium ethylenediaminetetraacetate (Na_2EDTA ; $\text{C}_{10}\text{H}_{14}\text{O}_8\text{Na}_2\text{N}_2\text{-H}_2\text{O}$) was

added to each water sample. Sample pH was adjusted to 3 using concentrated H_2SO_4 . The tandem SPE included an Oasis Hydrophilic-Lipophilic-Balance (HLB) cartridge (60 mg) followed by a mixed mode, HLB-cation exchange (MCX) cartridge (60 mg) (Waters Inc., Milford, MA). The HLB and MCX cartridges were conditioned with ultrapure H_2O , CH_3OH , and CH_3OH with 5% NH_4OH . The HLB cartridge was attached to the top of the MCX cartridge, and the sample was passed through the SPE cartridges using a vacuum extraction manifold. The cartridges were eluted with CH_3OH , and the MCX cartridge was eluted separately using CH_3OH with 5% NH_4OH . The eluate was spiked with 500 ng of $^{13}\text{C}_6$ -sulfamethazine (internal standard), vortexed, and evaporated to 20 μL using N_2 and a water bath of 55 ° C. Three hundred μL of 20 mM of $\text{NH}_4\text{C}_2\text{H}_3\text{OO}$ (pH 5.7) was added to sample eluate, vortexed, transferred to a glass chromatography vial, and frozen until analysis. Samples were extracted as a set of 11 environmental samples, one duplicate sample, two fortified ultrapure water spikes (check standards), and two ultrapure water blanks.

Method 2. This method targets eight antibiotic compounds (Table 1) in filtered water samples. Complete details of this method have been described previously (26). The antibiotics were extracted and analyzed using SPE and SIM LC/MS-ESI(+). Samples were prepared for extraction by adding $^{13}\text{C}_6$ -sulfamethazine and meclocycline as surrogate standards, Na_2EDTA , and H_2SO_4 . Target compounds were extracted using 60-mg HLB cartridges preconditioned with CH_3OH , NHCl , and distilled H_2O . Target compounds were eluted with CH_3OH into a test tube containing the internal standard, simatone. The extracts were then concentrated under N_2 to approximately 50 μL , and mobile phase A (10 mM $\text{NH}_4\text{H}_2\text{O}_2$ in 90/10 water/ CH_3OH with 0.3% CH_2O_2) was added. The resulting solutions were transferred to amber autosampler vials to prevent photodegradation of tetracyclines (30). Mobile phase conditions are described in detail elsewhere (26).

For each compound, the proton adduct of the molecular ion $(\text{M} + \text{H})^+$ and at least one confirming ion were acquired using LC/MS-ESI(+). All mass spectral conditions are described in detail elsewhere (26). Quantitation was based on the ratio of the base peak ion $(\text{M} + \text{H})^+$ of the analyte to the base peak of the internal standard. Standard addition was used for quantitation where each sample was analyzed with and without the addition of a 0.5 $\mu\text{g}/\text{L}$ spike to correct for suppression of the electrospray signal.

Method 3. This method targets 21 human prescription and nonprescription drugs and their select metabolites (Table 1) in filtered water samples. Compounds were extracted from 1 L water samples using SPE cartridges that contain 0.5 g of HLB (flow rate of 15 mL/min). After extraction, the adsorbed compounds were eluted with CH_3OH followed by CH_3OH acidified with $\text{C}_2\text{HCl}_3\text{O}_2$. The two fractions were reduced under N_2 to near dryness and then combined and brought to a final volume of 1 mL in 10% $\text{C}_2\text{H}_3\text{N}$:90% H_2O buffered with $\text{NH}_4\text{H}_2\text{O}_2/\text{CH}_2\text{O}_2$.

Compounds were separated and measured by high-performance liquid chromatography (HPLC) using a polar (neutral silanol) reverse-phase octylsilane (C8) HPLC column (Metasil Basic 3 μm , 150 \times 2.0 mm; Metachem Technologies). The compounds were eluted with a binary gradient of mobile phase A (aqueous $\text{NH}_4\text{H}_2\text{O}_2/\text{CH}_2\text{O}_2$ buffer; 10 mM, pH 3.7) and mobile phase B (100% $\text{C}_2\text{H}_3\text{N}$).

Method 4. This method (27, 28) targets 46 OWCs (Table 1) in unfiltered water. One-liter whole-

water samples were extracted using CLLE with CH_2Cl_2 . Distilled solvent was recycled through a microdroplet dispersing frit to improve extraction efficiency. Samples were extracted for 3 h at ambient pH and for an additional 3 h at pH 2. The extract was concentrated under N_2 to 1 mL and analyzed by capillary-column GC/MS. Available standards for the 4-nonylphenol compounds were composed of multiple isomers, and thus, laboratory standards for these compounds as well as octylphenol ethoxylates were prepared from technical mixtures.

Method 5. This method (28) targets 14 steroid compounds including several biogenic and synthetic reproductive hormones (Table 1). The CLLE extracts from the previously analyzed samples of Method 4 were derivatized and reanalyzed. Analysis of steroid and hormone compounds by GC/MS is enhanced by derivatization to deactivate the hydroxyl and keto functional groups. The technique used in this study is the formation of trimethylsilyl (TMS) ethers of the hydroxyl groups and oximes of the keto groups. Samples were stored in a silylating reagent to prevent hydrolysis of the derivatives back to the free compound. Surrogate standards (d_4 estradiol and d_7 cholesterol) were added to the samples prior to derivatization to evaluate method performance. After derivatization, the samples were analyzed by GC/MS.

Quality Assurance Protocol. At least one fortified laboratory spike and one laboratory blank was analyzed with each set of 10-16 environmental samples. Most methods had surrogate compounds added to samples prior to extraction to monitor method performance. A summary of recoveries for target compounds and surrogate compounds in environmental samples (Table 2) indicates the general proficiency of the methods. The RL (Table 1) is equivalent to the lowest concentration standard that could be reliably quantitated. The compound concentrations reported below the RL or the lowest calibration standard were estimated as indicated in Figure 2. The concentration of compounds with <60% recovery, routinely detected in laboratory blanks, or prepared with technical grade mixtures, was also considered estimated (Table 1).

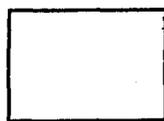


Figure 2 Measured concentrations for the 30 most frequently detected organic wastewater contaminants. Boxplots show concentration distribution truncated at the reporting level. Estimated values below the reporting level are shown. Estimated maximum values for coprostanol and cholesterol obtained from Method 5 (Table 1) are not shown. The analytical method number is provided (in parentheses) at the end of each compound name. An explanation of a boxplot is provided in Figure 3.

The laboratory blanks were used to assess potential sample contamination. Blank contamination was not subtracted from environmental results. However, environmental concentrations within twice the values observed in the set blank were reported as less than the RL.

A field quality assurance protocol was used to determine the effect, if any, of field equipment and procedures on the concentrations of OWCs in water samples. Field blanks, made from laboratory-grade organic free water, were submitted for about 5% of the sites and analyzed for all of the 95 OWCs. Field blanks were subject to the same sample processing, handling, and equipment as the stream samples. To date, one field blank had a detection of coprostanol and testosterone, one field blank had a detection of naphthalene and tri(dichlorisopropyl)phosphate, and one field blank had a detection of naphthalene, 4-nonylphenol, phenol, 4-*tert*-octylphenol monoethoxylate, and ethanol,2-butoxy-phosphate. Most of these detections were near their respective RLs verifying the general effectiveness of the sampling protocols used for this study. In addition all field blanks had low level

concentrations of cholesterol being measured using Method 5 (median concentration = 0.09 $\mu\text{g/L}$) documenting its ubiquitous nature in the environment. Cholesterol concentrations from 0.005 to 0.18 $\mu\text{g/L}$ obtained through Method 5 were set to less than the RL.

Compounds that were measured by more than one analytical method (Table 1; Figure 3) also were used to evaluate the results for this study. The presence or absence of these compounds were confirmed in 100% of the determinations for sulfamerazine, and sulfathiazole; 98.8% for oxytetracycline, sulfadimethoxine, sulfamethazine, and tetracycline; 98.6% for cholesterol and coprostanol; 97.6% for chlortetracycline; 95.7% for 17 β -estradiol; 94.4% for cotinine; 94.0% for trimethoprim; 89.1% for sulfamethoxazole; 86.4% for codeine; and 83.3% for caffeine. The comparisons for codeine, caffeine, and cotinine may have been affected by the differing extractions (SPE versus CLLE) as well as differing types of sample (filtered versus whole water).



Figure 3 Comparison of concentrations of select compounds that were measured using two different methods with significantly different reporting levels. Boxplots show concentration distribution truncated at the reporting level. Estimated values below the reporting level are shown. Estimated maximum values for cholesterol and coprostanol obtained from Method 5 (Table 1) are not shown. The analytical method number is provided (in parentheses) at the end of each compound name.

An interlaboratory comparison of Methods 1 and 3 was conducted using two reagent water blanks and 24 reagent water spikes prepared at concentrations ranging from 0.5 to 1.1 $\mu\text{g/L}$ for two frequently detected antibiotics (sulfamethoxazole and trimethoprim). The results demonstrated that both methods are accurately confirming the presence of sulfamethoxazole and trimethoprim in water, with the measured concentrations being within a factor of 3 or better of the actual concentrations for these compounds. No false positives or false negatives occurred for this experiment.

Results and Discussion

One or more OWCs were found in 80% of the 139 streams sampled for this study. The high overall frequency of detection for the OWCs is likely influenced by the design of this study, which placed a focus on stream sites that were generally considered susceptible to contamination (i.e. downstream of intense urbanization and livestock production). In addition, select OWCs (such as cholesterol) can also be derived from nonanthropogenic sources. Furthermore, some of the OWCs were selected because previous research (28) identified them as prevalent in the environment. Thus, the results of this study should not be considered representative of all streams in the United States. A previous investigation of streams downstream of German municipal sewage treatment plants also found a high occurrence of OWCs (31).

A large number of OWCs (82 out of 95) were detected at least once during this study (Table 1). Only eight antibiotics and five other prescription drugs were not detected in the samples analyzed (Table 1). Measured concentrations were generally low (median detectable concentrations generally <1 $\mu\text{g/L}$, Table 1), with few compounds exceeding drinking-water guidelines, health advisories, or aquatic-life criteria (Table 1). The concentration of benzo[a]pyrene exceeded its maximum contaminant level (MCL) of 0.2 $\mu\text{g/L}$ at one site and bis(2-ethylhexyl)phthalate concentrations exceeded its MCL of 6.0 $\mu\text{g/L}$ at five sites. In addition, aquatic-life criteria were exceeded for chlorpyrifos (Table 1) at a single site. However, many of the 95 OWCs do not have such guidelines or criteria determined (Table 1). In fact, much is yet to be known about the potential toxicological effects of many of the OWCs under

investigation (1). For many OWCs, acute effects to aquatic biota appear limited because of the low concentrations generally occurring in the environment (24, 32-34). More subtle, chronic effects from low-level environmental exposure to select OWCs appear to be of much greater concern (1). Such chronic effects have been documented in the literature (34-38). In addition, because antibiotics are specifically designed to reduce bacterial populations in animals, even low-level concentrations in the environment could increase the rate at which pathogenic bacteria develop resistance to these compounds (15-17, 39).

The 30 most frequently detected compounds represent a wide variety of uses and origins including residential, industrial, and agricultural sources (Figure 2, Table 1). Only about 5% of the concentrations for these compounds exceeded 1 µg/L. Over 60% of these higher concentrations were derived from cholesterol and three detergent metabolites (4-nonylphenol, 4-nonylphenol monoethoxylate, and 4-nonylphenol diethoxylate). The frequent detection of cotinine, 1,7-dimethylxanthine, erythromycin-H₂O, and other OWC metabolites demonstrate the importance of obtaining data on degradates to fully understand the fate and transport of OWCs in the hydrologic system. In addition, their presence suggests that to accurately determine the overall effect on human and environmental health (such as pathogen resistance and genotoxicity) from OWCs, their degradates should also be considered. The presence of the parent compound and/or their select metabolites in water resources has previously been documented for OWCs (40, 41) as well as other classes of chemicals such as pesticides (42, 43).

Many of the most frequently detected compounds (Figure 2) were measured in unfiltered samples using Method 4. Thus, their frequencies of detection may be somewhat higher because concentrations being measured include both the dissolved and particulate phases, whereas concentrations measured by Methods 1-3 include just the dissolved phase. For example, about 90% of the coprostanol discharged from sewage effluents has been shown to be associated with particulate matter (44). Thus, the concentration and frequency of detection for select compounds would likely have been reduced if sample filtration had taken place.

Variations in RL also influence the frequency of OWC detection (Figure 2). For example, the detection of 4-nonylphenol would likely have been much greater if an order of magnitude lower RL (similar to other OWCs) could have been achieved. The effect of RL on frequencies of detection is more clearly demonstrated by comparison of concentrations of select compounds that were measured using multiple analytical methods (Figure 3). As expected, the frequency of detection for a given compound was higher with the lower RL. The only exception being caffeine, where filtration of Method 3 may have reduced caffeine concentrations compared to that of the unfiltered Method 4. Figures 2 and 3 also demonstrate the importance of estimated values (45) below the RL. Clearly the numerous estimated concentrations illustrate that the current RLs are not low enough to accurately characterize the total range of OWC concentrations in the stream samples and that the frequencies of detection for this study are conservative.

To obtain a broader view of the results for this study, the 95 OWCs were divided into 15 groups based on their general uses and/or origins. The data show two environmental determinations: frequency of detection (Figure 4A) and percent of total measured concentration (Figure 4B) for each group of compounds. These two views show a vastly different representation of the data. In relation to frequency of detection, there were a number of groups that were frequently detected, with seven of the 15 groups being found in over 60% of the stream samples (Figure 4A). However, three groups (detergent metabolites, plasticizers, and steroids) contributed almost 80% of the total measured concentration (Figure 4B).



Figure 4 Frequency of detection of organic wastewater contaminants by general use category (4A), and percent of total measured concentration of organic wastewater contaminants by general use category (4B). Number of compounds in each category shown above bar.

For those groups of compounds that have received recent public attention—namely antibiotics, nonprescription drugs, other prescription drugs, and reproductive hormones (*1, 2, 10*)—nonprescription drugs were found with greatest frequency (Figure 4A). Antibiotics, other prescription drugs, and reproductive hormones were found at relatively similar frequencies of detection. The greater frequency of detection for nonprescription drugs may be at least partially derived from their suspected greater annual use compared to these other groups of compounds. When toxicity is considered, measured concentrations of reproductive hormones may have greater implications for health of aquatic organisms than measured concentrations of nonprescription drugs. Previous research has shown that even low-level exposure ($<0.001 \mu\text{g/L}$) to select hormones can illicit deleterious effects in aquatic species (*7, 46, 47*).

Mixtures of various OWCs were prevalent during this study, with most (75%) of the streams sampled having more than one OWC identified. In fact, a median of seven OWCs were detected in these streams, with as many as 38 compounds found in a given streamwater sample (Figure 5). Because only a subset of the 95 OWCs were measured at most sites collected during the first year of study, it is suspected that the median number of OWCs for this study is likely underestimated. Although individual compounds were generally detected at low-levels, total concentrations of the OWCs commonly exceeded $1 \mu\text{g/L}$ (Figure 5). In addition, 33 of the 95 target OWCs are known or suspected to exhibit at least weak hormonal activity with the potential to disrupt normal endocrine function (*4, 7, 8, 10, 12, 22, 36, 37, 48-50*), all of which were detected in at least one stream sample during this study (Table 1). The maximum total concentration of hormonally active compounds was $57.3 \mu\text{g/L}$. Aquatic species exposed to estrogenic compounds have been shown to alter normal hormonal levels (*7, 48, 51*). Thus, the results of this study suggest that additional research on the toxicity of the target compounds should include not only the individual OWCs but also mixtures of these compounds. The prevalence of multiple compounds in water resources has been previously documented for other contaminants (*52, 53*). In addition, research has shown that select chemical combinations can exhibit additive or synergistic toxic effects (*54-56*), with even compounds of different modes of action having interactive toxicological effects (*57*).

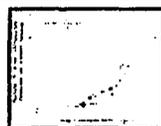


Figure 5 Relation between total concentration (summation from all detections) and number of organic wastewater contaminants found per water sample (Spearman's rank correlation coefficient = 0.94, $P < 0.001$).

The results of this study document that detectable quantities of OWCs occur in U.S. streams at the national scale. This implies that many such compounds survive wastewater treatment (*1, 6, 58*) and biodegradation (*59*). Future research will be needed to identify those factors (i.e. high use and chemical persistence) that are most important in determining the occurrence and concentration of OWCs in water resources.

Although previous research has also shown that antibiotics (*60*), other prescription drugs (*1, 2, 19*,

61-63), and nonprescription drugs (1, 40, 62, 64) can be present in streams, this study is the first to examine their occurrence in a wide variety of hydrogeologic, climatic, and land-use settings across the United States. Much is yet to be learned pertaining to the effects (particularly those chronic in nature) on humans, plants, and animals exposed to low-level concentrations of pharmaceuticals and other OWCs. Furthermore, little is known about the potential interactive effects (synergistic or antagonistic toxicity) that may occur from complex mixtures of these compounds in the environment. Finally, additional research also needs to be focused on those OWCs not frequently detected in this stream sampling. Select OWCs may be hydrophobic and thus may be more likely to be present in stream sediments than in streamwater (65, 66). For example, the low frequency of detection for the tetracycline (chlortetracycline, doxycycline, oxytetracycline, tetracycline) and quinolone (ciprofloxacin, enrofloxacin, norfloxacin, sarafloxacin) antibiotics is not unexpected given their apparent affinity for sorption to sediment (66). In addition, select OWCs may be degrading into new, more persistent compounds that could be transported into the environment instead of (or in addition to) their associated parent compound.

Acknowledgment

The authors wish to acknowledge the USGS scientists and field technicians who provided essential assistance to this project by identifying candidate stream sites across the United States and in collecting and processing stream samples. In addition, the authors thank Michele Lindsey, Jeff Cahill, and Greg Brown for their important contributions to developing the analytical methods being used. The authors also acknowledge Steffanie Keefe for her efforts in compiling the existing ecotoxicological data, Jessica Hopple for her assistance in generating select figures for this paper, and Kymm Barnes for her assistance in compiling the water-quality data for this study. This project was supported by the U.S. Geological Survey, Toxic Substances Hydrology Program. The use of trade, firm, or brand names in this paper is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

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Environ. Sci. Technol., **36** (6), 1202 -1211, 2002. 10.1021/es011055j S0013-936X(01)01055-0

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Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance

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Received for review June 12, 2001

Revised manuscript received November 26, 2001

Accepted December 12, 2001

Abstract:

To provide the first nationwide reconnaissance of the occurrence of pharmaceuticals, hormones, and other organic wastewater contaminants (OWCs) in water resources, the U.S. Geological Survey used

five newly developed analytical methods to measure concentrations of 95 OWCs in water samples from a network of 139 streams across 30 states during 1999 and 2000. The selection of sampling sites was biased toward streams susceptible to contamination (i.e. downstream of intense urbanization and livestock production). OWCs were prevalent during this study, being found in 80% of the streams sampled. The compounds detected represent a wide range of residential, industrial, and agricultural origins and uses with 82 of the 95 OWCs being found during this study. The most frequently detected compounds were coprostanol (fecal steroid), cholesterol (plant and animal steroid), *N,N*-diethyltoluamide (insect repellent), caffeine (stimulant), triclosan (antimicrobial disinfectant), tri(2-chloroethyl)phosphate (fire retardant), and 4-nonylphenol (nonionic detergent metabolite). Measured concentrations for this study were generally low and rarely exceeded drinking-water guidelines, drinking-water health advisories, or aquatic-life criteria. Many compounds, however, do not have such guidelines established. The detection of multiple OWCs was common for this study, with a median of seven and as many as 38 OWCs being found in a given water sample. Little is known about the potential interactive effects (such as synergistic or antagonistic toxicity) that may occur from complex mixtures of OWCs in the environment. In addition, results of this study demonstrate the importance of obtaining data on metabolites to fully understand not only the fate and transport of OWCs in the hydrologic system but also their ultimate overall effect on human health and the environment.

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May 1, 1996

Dear Customer:

The United States Environmental Protection Agency ("EPA"), sets drinking water standards and monitoring frequencies. EPA requires that water providers such as Citizens Utilities notify you if any of its requirements are not met.

In the last quarter of 1995, Citizens Utilities inadvertently did not perform required monitoring to verify continued compliance with the maximum contaminant level for nitrates in accordance with our Arizona Department of Environmental Quality's ("ADEQ") approved blending plan. In fact, the Riviera well which is high in nitrates was not utilized in the last quarter and was disconnected and taken out of service. Citizens Utilities also did not conduct four (4) consecutive quarterly samplings for synthetic organic chemicals and gross alpha particle activity as outlined by ADEQ in our testing requirements. Citizens has begun the quarterly sampling and the test results show full compliance with EPA drinking water standards for these chemicals. In addition, Citizens Utilities did not perform follow up sampling at each sample point that was included in a composite sample taken January 17 and January 18, 1995, that exceeded one-fifth of the maximum contaminant level for nitrate/nitrite. Citizens Utilities has since tested all the sites for Nitrate/Nitrite and assures you that the drinking water contains less than the Nitrate/Nitrite maximum contaminant levels set by the EPA.

While this notice is required by EPA and ADEQ rules, Citizens Utilities is confident that these violations present no risk to you, our valued water customers. We have taken appropriate steps to correct these violations, and there is no need for our customers to take additional preventative measures.

If you have any questions or concerns, feel free to call Cindy Evans at (520)763-0463.

Sincerely,

David H. Bereskin
Manager of Operations & Engineering

Water laws on hold till next year

Budget crisis shelves bills on conservation

By Shaun McKinnon
The Arizona Republic

A package of recommendations from Gov. Jane Hull's water commission fell victim to the ongoing state budget crisis Thursday when sponsors of two key bills pulled the measures until next year.

Sen. Herb Guenther, chairman of the Senate Natural Resources committee, said lawmakers won't have enough time this year to consider the complex proposals, assembled by the governor's 49-member water panel after more than a year and a half of study.

The Legislature's regular session has been halted by continuing budget negotiations, leaving lawmakers unable to act on other issues. Guenther, D-Tacna, said backers of the water bills need more time to involve everyone interested and answer a lengthening list of questions about the proposals.

The water commission proposed a number of revisions to the state's 22-year-old groundwater management laws, most aimed at better conserving resources. Already stirring debate are recommendations to protect riparian areas by restricting groundwater pumping.

Commission members also suggested creating a financing authority to help water providers use more renewable water sources, such as the Central Arizona Project.

Rep. Tom O'Halleran, R-Sedona, said the ideas deserve more time and attention, along with hearings to help other lawmakers understand what is being proposed. He said the water bills would be introduced early in next year's regular session.

Fatal E. Coli Outbreak Traced To Water Source at County Fair

THE ASSOCIATED PRESS

ALBANY, N.Y. — A contaminated underground water source is believed to be the origin of an *E. coli* outbreak at a county fair that killed a 3-year-old girl and sickened 118 others, state Health Department officials said Sunday.

Tests on water in an aquifer supplying the Washington County fairgrounds turned up high levels of the *E. coli* bacteria. It remained unclear how the water became contaminated, but officials said runoff from animals or another contaminant may have been to blame.

A total of 118 people — mostly children — were treated at hospitals in five counties and Vermont since Friday, and at least 41 remained hospitalized Sunday evening, according to state Health Department spokeswoman Kristine A. Smith.

All had visited the Washington County Fair about 35 miles north of Albany on either Aug. 28 or 29.

Rachel Aldrich, 3, of Clifton Park, died Saturday at Albany Medical Center Hospital. She had been in critical condition with *E. coli* contamination since Friday.

Aldrich died after developing hemolytic uremic syndrome, or HUS, as a result of the *E. coli* contamination, Smith said. HUS attacks the blood cells and can result in kidney failure.

By Sunday evening, a 4-year-old boy had developed HUS. He was being treated at Albany Medical Center Hospital, Smith said.

E. coli bacteria normally live in the intestines of humans and other warm-blooded animals. Most strains are harmless but some — like this one identified as O157:H7 — can be deadly. Symptoms of infection include abdominal cramps, diarrhea and fever.

E. coli bacteria must be ingested to cause infection. Illness can be caused by exposure to an infected person, or by ingesting tainted food or liquids.

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Parents sue water firm in 2 boys' deaths

By Maggie Galehouse
The Arizona Republic

PEORIA — The families of two 5-year-old boys who died in October of a rare form of meningitis have filed a lawsuit against the Rose Valley Water Co.

The parents of Zach Stalls and Davy Luna are claiming negligence, saying Rose Valley provided unchlorinated and contaminated water, operated a flawed water system and delivered a defective product.

Both boys died after inhaling water contaminated with a deadly microorganism, *Naegleria fowleri*, through the nose. Zach drank and bathed in the water at his Peoria home, and Davy did the same at his grandfather's home in Peoria. The parents are asking for an unspecified amount of money.

Rose Valley officials dispute the suit. The company filed a motion in Maricopa County Superior Court to dismiss the second claim in the lawsuit, arguing that the company followed the letter of the law in terms of county requirements for water quality testing and drinking water safety. The law does not require small, private water companies to chlorinate.

"The implication of this claim is to make all small water companies, if not all water companies, automatically liable regardless of whether they follow regulatory standards," Rose Valley President Gary Brasher said in a statement.

The tests that Rose Valley conducted on the water were inconclusive, but Maricopa County health authorities found evidence of *Naegleria fowleri* in a Peoria well, a Rose Valley tank and a refrigerator filter in the home of Davy's grandfather.

Roger Strassburg, the attorney representing the parents, said that "bare legal compliance" with regulations does not absolve Rose Valley from doing what it takes to protect its customers.

Group faults city's water report

By Mary Jo Pitzl
The Arizona Republic

A national environmental group on Tuesday gave Phoenix poor marks for its drinking water but faulted it more for paperwork problems than letting contaminants pour through the tap.

"We are certainly not telling healthy adults in Phoenix that they should not drink the tap water," said Erik Olson, director of the drinking water program for the Natural Resources Defense Council. "We are saying the record-keeping in the city and state is a mess."

City officials said they were perplexed at the council's conclusions and planned to analyze the report, released nationally, before responding fully.

But they hastened to note that the city's drinking water is safe.

"Drink the tap water," said Phoenix Water Department spokesman Ken Kroski. "Phoenix's tap water is safe."

Phoenix ran afoul of federal water-reporting standards in 1996 but since then has not heard of any problems from the state or the U.S. Environmental Protection Agency, Kroski said.

The NRDC report grades 19 big-city water systems in three categories. Phoenix received the only "failing" mark in the entire report, for what the council said was its poor performance in providing information to the public.

For example, the council criticizes Phoenix for not reporting the average concentration of contaminants such as arsenic and nitrate. Instead, it reports the highest levels, which in both cases are within federal health standards.

State officials said the report appears to dwell on reporting inconsistencies between the state and federal governments. Those are computer problems, not water-quality problems, said Patrick Gibbons, Arizona Department of Environmental Quality spokesman.

NRDC 059

Meningitis amoeba source a mystery

By David Madrid, Christina Leonard
and Charles Kelly
The Arizona Republic

A meningitis-causing amoeba has been found in a Rose Valley Water Co. well tank and the refrigerator filter of the grandfather of a little boy who died of the disease in October, health authorities said Friday.

Maricopa County health officials made the revelations in announcing the latest results on suspect northwest Valley water tested by the Centers for Disease Control and Prevention in Atlanta.

County officials continued to stress that Peoria water is safe.

Some of the country's foremost disease detectives have been asked to try to come up with the cause of the mysterious deaths of two West Valley boys from amoebic meningitis. Friday's results showed the tank and the refrigerator filter tested positive for the *Naegleria fowleri* amoeba, which causes the

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THE ARIZONA REPUBLIC

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Monday, April 14, 2003

SECTION B

Water amoeba under attack

By David Madrid
The Arizona Republic

Scientists in the Valley and across the country are gearing up to hunt an elusive, deadly organism that mysteriously emerged in a northwest Valley water system, killing two boys, spurring a four-day water shutdown and baffling national experts.

The trackers are planning to close in on their prey on two fronts: developing a fast, accurate test to detect the *Naegleria fowleri* amoeba in ground

water and search for the amoeba in the state's water supplies.

In addition, the Maricopa County Environmental Services Department is testing all community wells for coliform, bacteria that can indicate water contamination.

A team of investigators that includes county, state, federal and academic experts has been working on the mystery. Two 5-year-old boys died

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Find out more about water contamination in the West Valley at more.azcentral.com.

last November of amoebic meningitis, caused by the *Naegleria fowleri* amoeba. Its

presence forced more than 2,500 northwest Valley households to be without water for several days until Peoria took over the system. Since January, those customers have returned to the Rose Valley Water Co.

Still, no one knows how this all happened.

Particularly puzzling to experts is that the amoeba existed in the well water system at all.

"It was well documented in November that this was the first time that anybody had ever seen *Naegleria fowleri* in a groundwater-supply system," said Jeff Stuck, safe drinking water program manager for the state Environmental Quality Department.

The county has so far tested 378 community wells, of which

See AMOEBIA Page B2

AMOEBA Experts hunt for cause

From Page B1

29 tested positive for total coliform. The bacteria does not indicate the presence of *Naegleria fowleri* but could mean there are other contaminants.

The problem with testing for *Naegleria fowleri* is that a fast, reliable and affordable test doesn't exist. Australia has the best test so far, and researchers here want to improve upon it.

The Centers for Disease Control and Prevention in Atlanta conducted the lab tests by trying to grow the *Naegleria fowleri* from water samples gathered from Rose Valley and Peoria.

Those tests showed evidence of the amoeba in a Peoria well head, a Rose Valley tank and in the refrigerator filter of the grandfather of one of the boys who died.

Michael Beach, a CDC epidemiologist, said investigators are trying to understand the implications of what has happened in the northwest Valley.

"Where does it grow? Is it going to grow in storage tanks? Is it in other parts of the distribution system for the water? We really don't have a good model to go on to understand those sorts of things right now," Beach said.

"This has implications obviously for other areas with similar temperatures and water systems as far as understanding how does it get in and how does it grow in there."

Besides conducting tests, the CDC also will train researchers at the University of Arizona in testing methods,

Beach said. It also wants to conduct animal studies to understand what forms of the amoeba are potentially lethal.

Narrowing the list of suspected carriers of the amoeba means separating rumor from fact.

Rated unlikely: the idea that it was introduced into the aquifer by Central Arizona Project water percolating into the aquifer in retention basins in the Agua Fria riverbed.

Chuck Graf of the ADEQ said the amoeba is too large to move through the tiny pores in the sand, gravel and clay the aquifer water moves through.

Still, CAP and other canal water is being studied. It is highly likely it contains the amoeba, which isn't really dangerous if you drink it, but rather if it is forced up the nose.

Investigators also are curious about whether the warmth of the groundwater allows the heat-loving amoeba to flourish. The average temperature of groundwater is 81 degrees, rising as high as 112 degrees.

A move to chlorinate all water pumped from wells would largely eliminate the *Naegleria fowleri* problem, said Charles Gerba, a University of Arizona professor of environmental microbiology.

Most private water companies have not been required to chlorinate, though some are doing so voluntarily. Rose Valley was required by the county to chlorinate before it could begin serving customers again.

The county says there are about 500 public water system wells in the county and many more private wells.

CLEAN WATER ACT 3

1365

CITIZEN SUITS

CLEAN WATER ACT 3 **1365 CITIZEN SUITS**

(a) Authorization; jurisdiction

Except as provided in subsection (b) of this section and section 1319(g)(6) of this title, any citizen may commence a civil action on his own behalf--

(1) against any person (including (i) the United States, and (ii) any other governmental instrumentality or agency to the extent permitted by the eleventh amendment to the Constitution) who is alleged to be in violation of (A) an effluent standard or limitation under this chapter or (B) an order issued by the Administrator or a State with respect to such a standard or limitation, or

(2) against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this chapter which is not discretionary with the Administrator.

The district courts shall have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, to enforce such an effluent standard or limitation, or such an order, or to order the Administrator to perform such act or duty, as the case may be, and to apply any appropriate civil penalties under section 1319(d) of this title.

(b) Notice

No action may be commenced--

(1) under subsection (a)(1) of this section--

(A) prior to sixty days after the plaintiff has given notice of the alleged violation (i) to the Administrator, (ii) to the State in which the alleged violation occurs, and (iii) to any alleged violator of the standard,

limitation, or order, or

(B) if the Administrator or State has commenced and is diligently prosecuting a civil or criminal action in a court of the United States, or a State to require compliance with the standard, limitation, or order, but in any such action in a court of the United States any citizen may intervene as a matter of right.

(2) under subsection (a)(2) of this section prior to sixty days after the plaintiff has given notice of such action to the Administrator,

except that such action may be brought immediately after such notification in the case of an action under this section respecting a violation of sections 1316 and 1317(a) of this title. Notice under this subsection shall be given in such manner as the Administrator shall prescribe by regulation.

(c) Venue; intervention by Administrator; United States interests protected

(1) Any action respecting a violation by a discharge source of an effluent standard or limitation or an order respecting such standard or limitation may be brought under this section only in the judicial district in which such source is located.

(2) In such action under this section, the Administrator, if not a party, may intervene as a matter of right.

(3) Protection of interests of United States

Whenever any action is brought under this section in a court of the United States, the plaintiff shall serve a copy of the complaint on the Attorney General and the Administrator. No consent judgment shall be entered in an action in which the United States is not a party prior to 45 days following the receipt of a copy of the proposed consent judgment by the Attorney General and the Administrator.

(d) Litigation costs

The court, in issuing any final order in any action brought pursuant to this section, may award costs of litigation (including reasonable attorney and expert witness fees) to any prevailing or substantially prevailing party, whenever the court determines such award is appropriate. The court may, if a temporary restraining order or preliminary injunction is sought, require the

filing of a bond or equivalent security in accordance with the Federal Rules of Civil Procedure.

(e) Statutory or common law rights not restricted

Nothing in this section shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any effluent standard or limitation or to seek any other relief (including relief against the Administrator or a State agency).

(f) Effluent standard or limitation

For purposes of this section, the term "effluent standard or limitation under this chapter" means (1) effective July 1, 1973, an unlawful act under subsection (a) of section 1311 of this title; (2) an effluent limitation or other limitation under section 1311 or 1312 of this title; (3) standard of performance under section 1316 of this title; (4) prohibition, effluent standard or pretreatment standards under section 1317 of this title; (5) certification under section 1341 of this title; (6) a permit or condition thereof issued under section 1342 of this title, which is in effect under this chapter (including a requirement applicable by reason of section 1323 of this title); or (7) a regulation under section 1345(d) of this title,.

[FN1]

(g) "Citizen" defined

For the purposes of this section the term "citizen" means a person or persons having an interest which is or may be adversely affected.

(h) Civil action by State Governors

A Governor of a State may commence a civil action under subsection (a) of this section, without regard to the limitations of subsection (b) of this section, against the Administrator where there is alleged a failure of the

Administrator to enforce an effluent standard or limitation under this chapter the violation of which is occurring in another State and is causing an adverse effect on the public health or welfare in his State, or is causing a violation of any water quality requirement in his State.

CREDIT(S)

(June 30, 1948, c. 758, Title V, § 505, as added Oct. 18, 1972, Pub.L. 92-500, § 2, 86 Stat. 888, and amended Feb. 4, 1987, Pub.L. 100-4, Title III, § 314(c), Title IV, § 406(d)(2), Title V, §§ 504, 505(c), 101 Stat. 49, 73, 75, 76.)

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