Gering

New Water Source Review

Water Treatment
McLaughlin Rincon

City of Gering
August 2006

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Section I. Background

Regulation

The Safe Drinking Water Act (SDWA) was amended in 1996 and provided for the following:

- Initiated State Revolving load funds
- Requires consumer annual reports
- Standards to be based on costs and risks
- Provides for source water protection
- Operator certification required
- Technical assistance requirement; EPA must provide a list of treatment techniques when new standard is set
- Variances allowed
  The 1986 SDWA did not allow for variances

Implementation of the 1996 SDWA Amendments have included setting two new Maximum Contaminants Levels (MCL) that affect Gering.

Arsenic and Uranium

A brief overview of these two new contaminates follows:

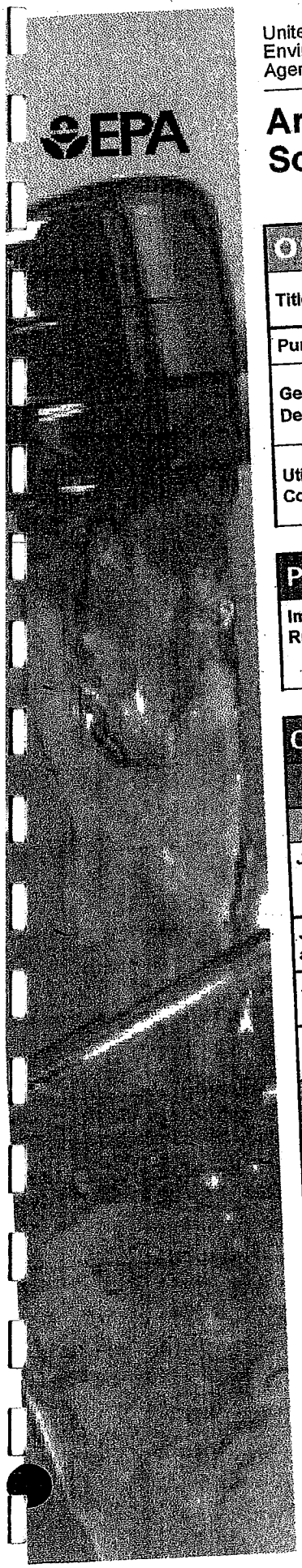
Arsenic

Published on January 22, 2001, the Arsenic Rule (Federal Regulation 6976) lowered the maximum contaminant level (MCL) from 0.05 mg/l (50 ppb) to 0.01 mg/l (10 ppb) and requires sampling be reported to 0.001 mg/l (1 ppb).

The revised MCL 0.01 mg/l (10 ppb) effective date is January 23, 2006 and ground water systems like Gering have collected initial samples and Gering has been placed on 3 year and 6 year sampling schedules depending upon P.O.E.

Waivers, states may issue monitoring waivers.

An EPA quick reference guide is presented on the following two pages.



United States Environmental Protection Agency | Office of Water (4606) | EPA 816-F-01-004 January 2001

Arsenic and Clarifications to Compliance and New Source Monitoring Rule: A Quick Reference Guide

Overview of the Rule

Title	Arsenic and Clarifications to Compliance and New Source Monitoring Rule 66 FR 6976 (January 22, 2001)
Purpose	To improve public health by reducing exposure to arsenic in drinking water.
General Description	Changes the arsenic MCL from 50 µg/L to 10 µg/L; Sets arsenic MCLG at 0; Requires monitoring for new systems and new drinking water sources; Clarifies the procedures for determining compliance with the MCLs for IOCs, SOCs, and VOCs.
Utilities Covered	All community water systems (CWSs) and nontransient, noncommunity water systems (NTNCWSs) must comply with the arsenic requirements. EPA estimates that 3,024 CWSs and 1,080 NTNCWSs will have to install treatment to comply with the revised MCL.

Public Health Benefits

Implementation of the Arsenic Rule will result in . . .	• Avoidance of 16 to 26 non-fatal bladder and lung cancers per year. • Avoidance of 21 to 30 fatal bladder and lung cancers per year. • Reduction in the frequency of non-carcinogenic diseases.

Critical Deadlines & Requirements

Consumer Confidence Report Requirements*

Report Due	Report Requirements
July 1, 2001	For the report covering calendar year 2000, systems that detect arsenic between 25 µg/L and 50 µg/L must include an educational statement in the consumer confidence reports (CCRs).
July 1, 2002 and beyond	For reports covering calendar years 2001 and beyond, systems that detect arsenic between 5 µg/L and 10 µg/L must include an educational statement in the CCRs.
July 1, 2002 - July 1, 2006	For reports covering calendar years 2001 to 2005, systems that detect arsenic between 10 µg/L and 50 µg/L must include a health effects statement in their CCRs.
July 1, 2007 and beyond	For reports covering calendar year 2006 and beyond, systems that are in violation of the arsenic MLC (10 µg/L) must include a health effects statement in their CCRs.

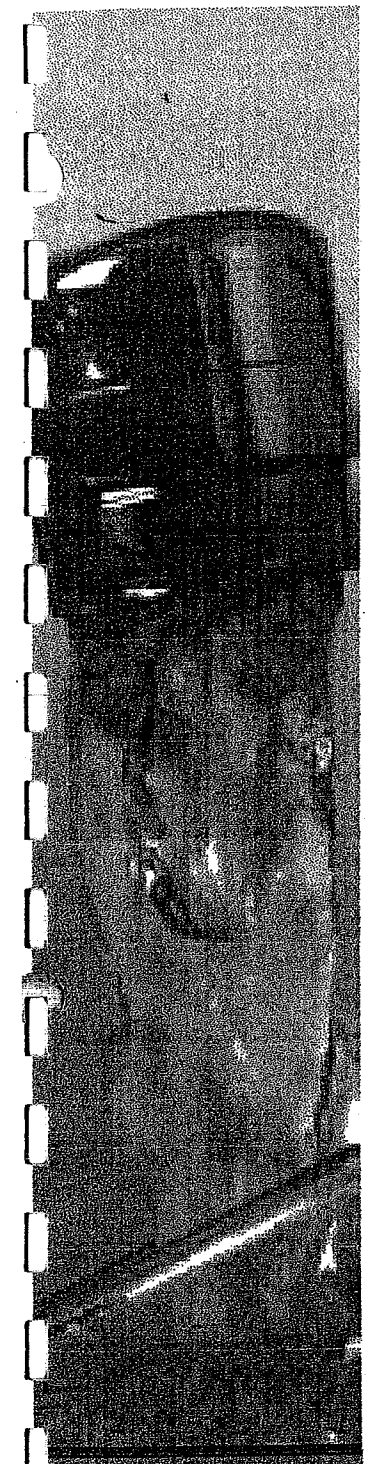
For Drinking Water Systems

Jan. 22, 2004	All *NEW* systems/sources must collect initial monitoring samples for all IOCs, SOCs, and VOCs within a period and frequency determined by the State.
Jan. 1, 2005	When allowed by the State, systems may grandfather data collected after this date.
Jan. 23, 2006	The new arsenic MCL of 10 µg/L becomes effective. All systems must begin monitoring or when allowed by the State, submit data that meets grandfathering requirements.
Dec. 31, 2006	Surface water systems must complete initial monitoring or have a State approved waiver.
Dec. 31, 2007	Ground water systems must complete initial monitoring or have a State approved waiver.

For States

Spring 2001	EPA meets and works with States to explain new rules and requirements and to initiate adoption and implementation activities.
Jan. 22, 2003	State primacy revision applications due.
Jan. 22, 2005	State primacy revision applications due from States that received 2-year extensions.

* For required educational and health effects statements, please see 40 CFR 141.154.



Compliance Determination (IOCs, VOCs, and SOCs)

1. Calculate compliance based on a running annual average at each sampling point.
2. Systems will not be in violation until 1 year of quarterly samples have been collected (unless fewer samples would cause the running annual average to be exceeded.)
3. If a system does not collect all required samples, compliance will be based on the running annual average of the samples collected.

Monitoring Requirements for Total Arsenic [1]

Initial Monitoring

One sample after the effective date of the MCL (January 23, 2006). Surface water systems must take annual samples. Ground water systems must take one sample between 2005 and 2007.

Reduced Monitoring

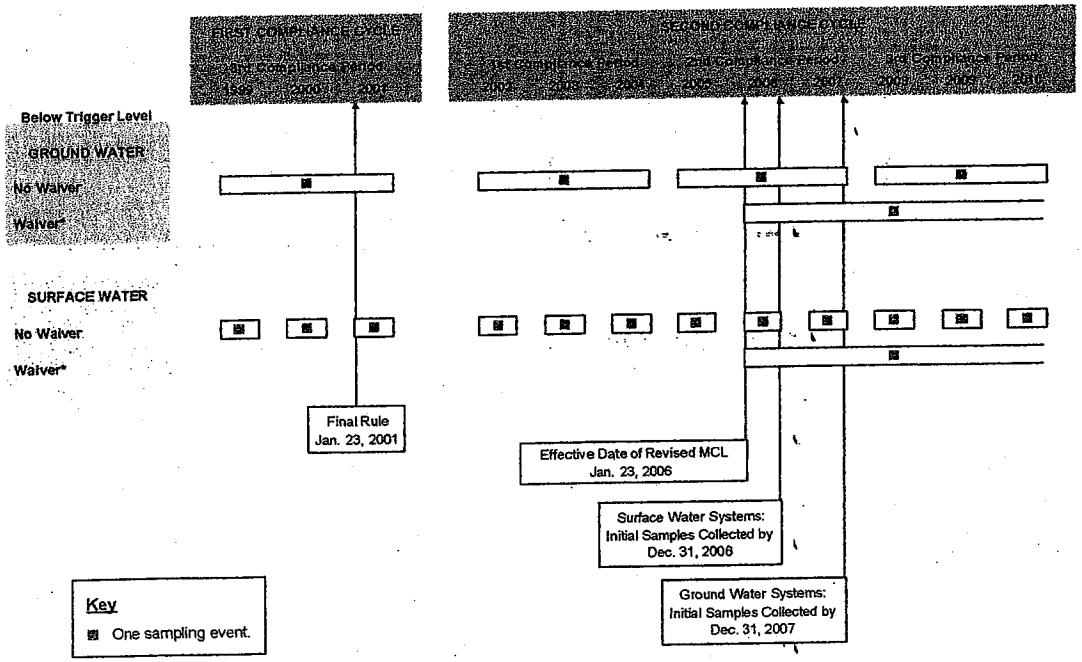
If the initial monitoring result for arsenic is less than the MCL . . .	Ground water systems must collect one sample every 3 years. Surface water systems must collect annual samples.

Increased Monitoring

A system with a sampling point result above the MCL must collect quarterly samples at that sampling point, until the system is reliably and consistently below the MCL.

[1] All samples must be collected at each entry point to the distribution system, unless otherwise specified by the State.

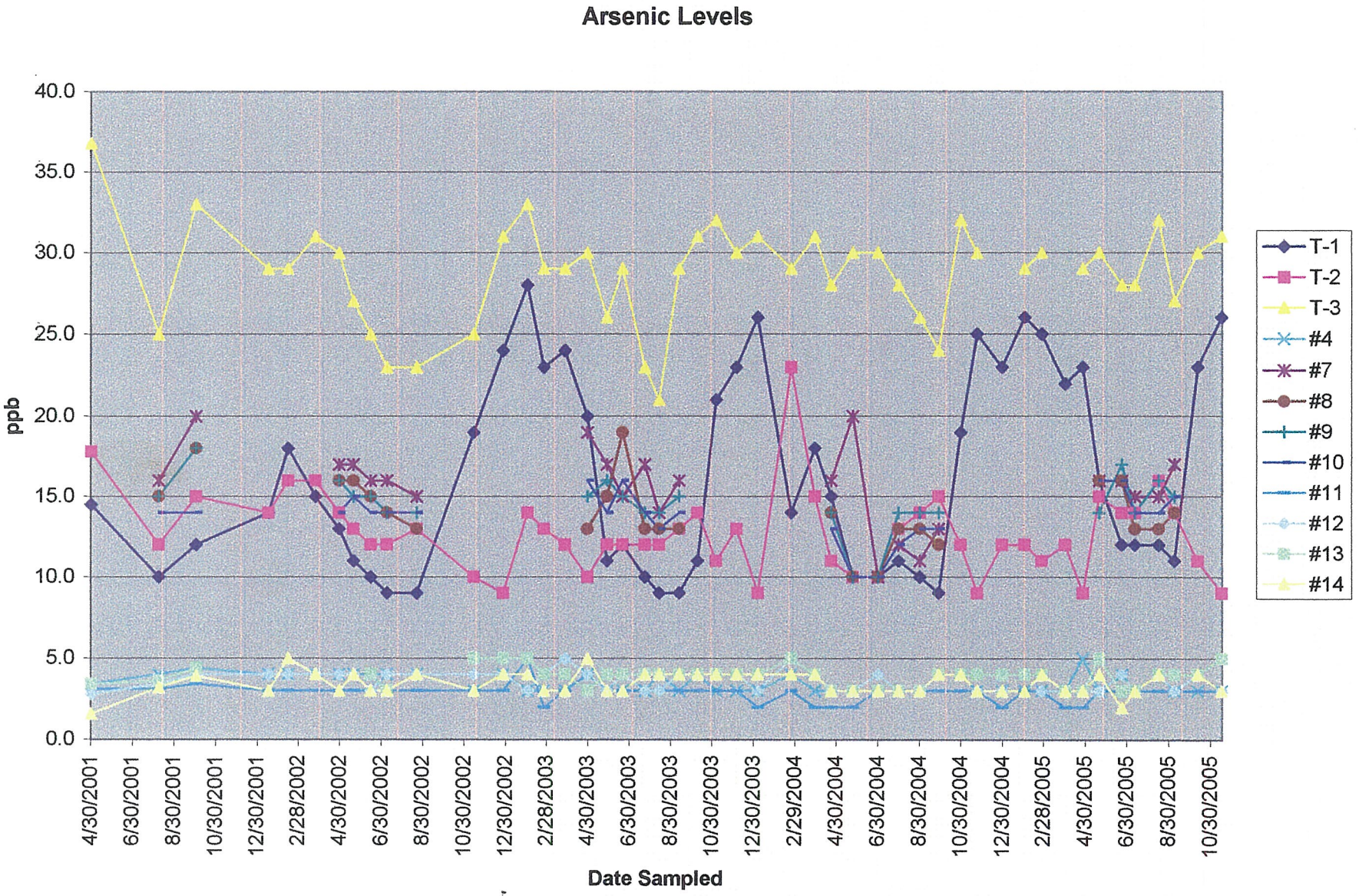
Applicability of the Standardized Monitoring Framework to Arsenic



*Waivers are not permitted under the current arsenic requirements. States may issue 9 year monitoring waivers under the revised final arsenic rule. To be eligible for a waiver, surface water systems must have monitored annually for at least 3 years. Ground water systems must conduct a minimum of 3 rounds of monitoring with detection limits below 10 µg/L.

For additional information on the Arsenic Rule

Call the Safe Drinking Water Hotline at 1-800-426-4791, visit the EPA Web site at www.epa.gov/safewater or contact your State drinking water representative. EPA will provide arsenic training over the next year.


Arsenic Levels
ppb
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
4/30/2001
6/30/2001
8/30/2001
10/30/2001
12/30/2001
2/28/2002
4/30/2002
6/30/2002
8/30/2002
10/30/2002
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8/30/2004
10/30/2004
12/30/2004
2/28/2005
4/30/2005
6/30/2005
8/30/2005
10/30/2005
Date Sampled
T-1
T-2
T-3
#4
#7
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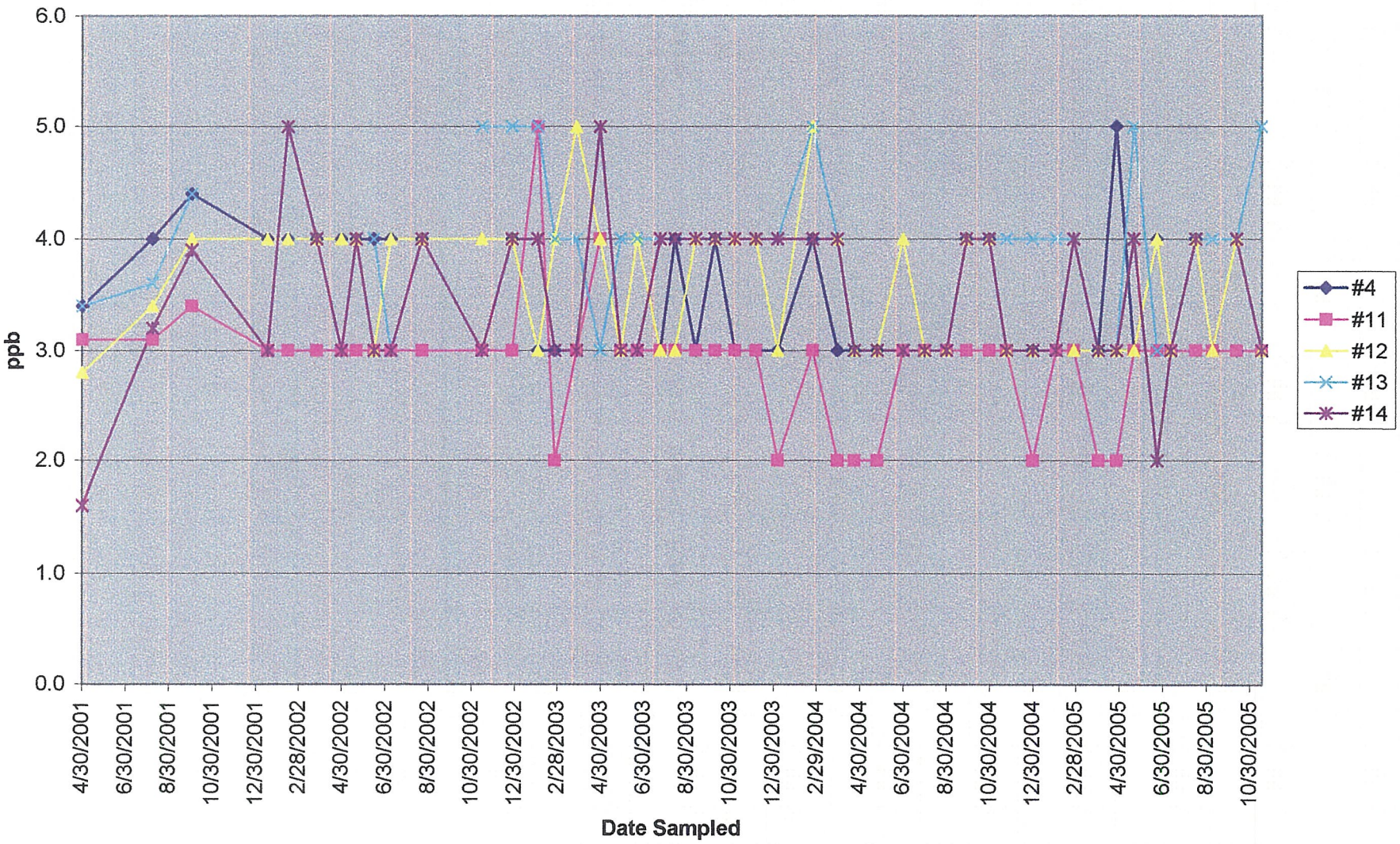
#11
#12
#13
#14

Arsenic Midtown Wells



Radionuclide

EPA first began to regulate radionuclides in 1976 and published a new rule on December 7, 2000 (Federal Reg. 65FR 76708-76753). While many of the requirements remain unchanged, the new requirements added the following:

- ❖ Uranium – EPA established a new MCL of 30 ppb for uranium for the first time
- ❖ Radium – 228 – systems must monitor separately for radium – 228
- ❖ Entry point monitoring – systems must monitory at each active entry point to the distribution system

Water systems were required to begin initial monitoring in late 2003 or 2004. Monitoring requirements and violations of the rule are summarized as follows:

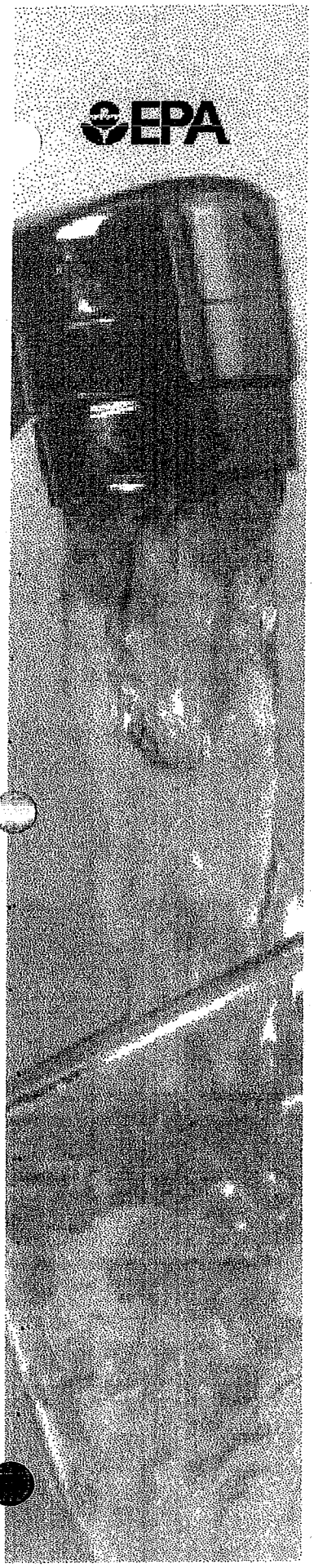
- ❖ The running annual average of quarterly samples is not to exceed the MCL i.e. uranium MCL 30 ppb
- ❖ If any single sample is four times the MCL, the system is in violation or 120 ppb
- ❖ If any sampling result causes the running annual average to exceed the MCL, the system is in violation

Exemptions, waivers are not allowed for rules in effect prior to 1986 i.e. gross alpha, radium 226/228 and total beta and photon emitters.

An exemption may be issued by the state for uranium.

Gering began monitoring in 2004 and received a notice of Uranium Maximum Contaminant Level Violation June 1, 2005 for the four previous quarters; the running annual average was 48 ppb. The notice is included in Appendixes

An EPA Quick Reference guide is presented on the following pages.



United States Environmental Protection Agency | Office of Water (4606) | EPA 816-F-01-003 June 2001

Radionuclides Rule: A Quick Reference Guide

Overview of the Rule

Title	**Radionuclides Rule 66 FR 76708 December 7, 2000 Vol. 65, No. 236**
Purpose	**Reducing the exposure to radionuclides in drinking water will reduce the risk of cancer. This rule will also improve public health protection by reducing exposure to all radionuclides.**
General Description	**The rule retains the existing MCLs for combined radium-226 and radium-228, gross alpha particle radioactivity, and beta particle and photon activity. The rule regulates uranium for the first time.**
Utilities Covered	**Community water systems, all size categories.**

Public Health Benefits

Implementation of the Radionuclides Rule will result in . . .	**Reduced uranium exposure for 620,000 persons, protection from toxic kidney effects of uranium, and a reduced risk of cancer.**
Estimated impacts of the Radionuclides Rule include . . .	**Annual compliance costs of $81 million. Only 795 systems will have to install treatment.**

Regulated Contaminants

Regulated Radionuclide	MCL	MCLG
Beta/photon emitters*	4 mrem/yr	0
Gross alpha particle	15 pCi/L	0
Combined radium-226/228	5 pCi/L	0
Uranium	30 µg/L	0

*A total of 168 individual beta particle and photon emitters may be used to calculate compliance with the MCL.

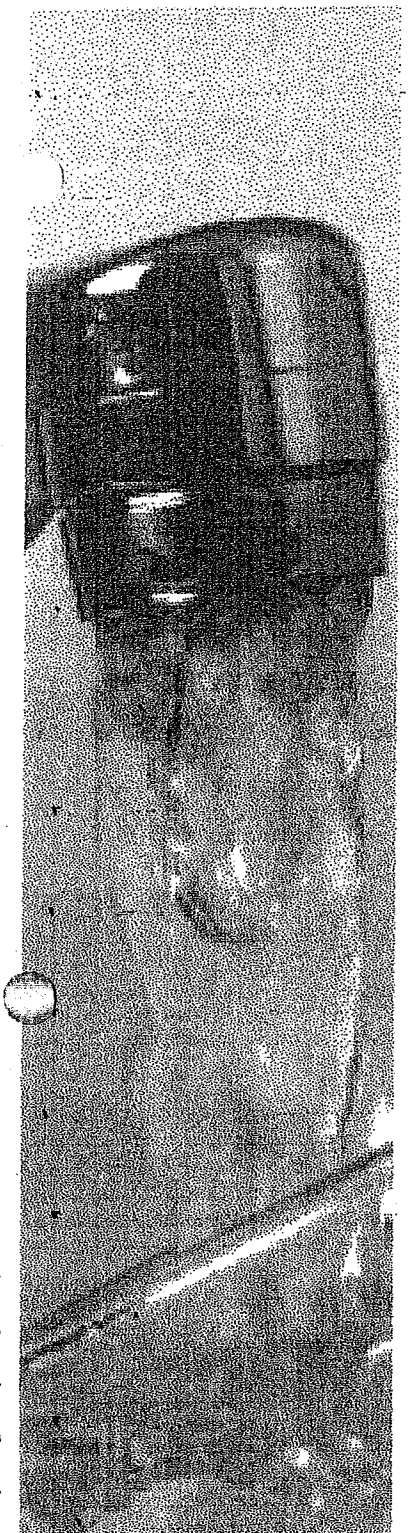
Critical Deadlines & Requirements

For Drinking Water Systems

June 2000 - December 8, 2003	When allowed by the State, data collected between these dates may be eligible for use as grandfathered data (excluding beta particle and photon emitters).
December 8, 2003	Systems begin initial monitoring under State-specified monitoring plan unless the State permits use of grandfathered data.
December 31, 2007	All systems must complete initial monitoring.

For States

December 2000 - December 2003	States work with systems to establish monitoring schedules.
December 8, 2000	States should begin to update vulnerability assessments for beta photon and particle emitters and notify systems of monitoring requirements.
Spring 2001	EPA meets and works with States to explain new rules and requirements and to initiate adoption and implementation activities.
December 8, 2002	State submits primacy revision application to EPA. (EPA approves within 90 days.)



Monitoring Requirements

Gross Alpha, Combined Radium-226/228, and Uranium (1)	Beta Particle and Photon Radioactivity (1)
Initial Monitoring	
Four consecutive quarters of monitoring.	No monitoring required for most CWSs. Vulnerable CWSs (2) must sample for: • Gross beta: quarterly samples. • Tritium and Strontium-90: annual samples.
Reduced Monitoring	
If the average of the initial monitoring results for each contaminant is below the detection limit: One sample every 9 years. If the average of the initial monitoring results for each contaminant is greater than or equal to the detection limit, but less than or equal to one-half the MCL: One sample every 6 years. If the average of the initial monitoring results for each contaminant is greater than one-half the MCL, but less than or equal to the MCL: One sample every 3 years.	If the running annual average of the gross beta particle activity minus the naturally occurring potassium-40 activity is less than or equal to 50 pCi/L: One sample every 3 years.
Increased Monitoring	
A system with an entry point result above the MCL must return to quarterly sampling until 4 consecutive quarterly samples are below the MCL.	If gross beta particle activity minus the naturally occurring potassium-40 activity exceeds 50 pCi/L, the system must: • Speciate as required by the State. • Sample at the initial monitoring frequency.

(1) All samples must be collected at each entry point to the distribution system.
(2) The rule also contains requirements for CWSs using waters contaminated by effluents from nuclear facilities.

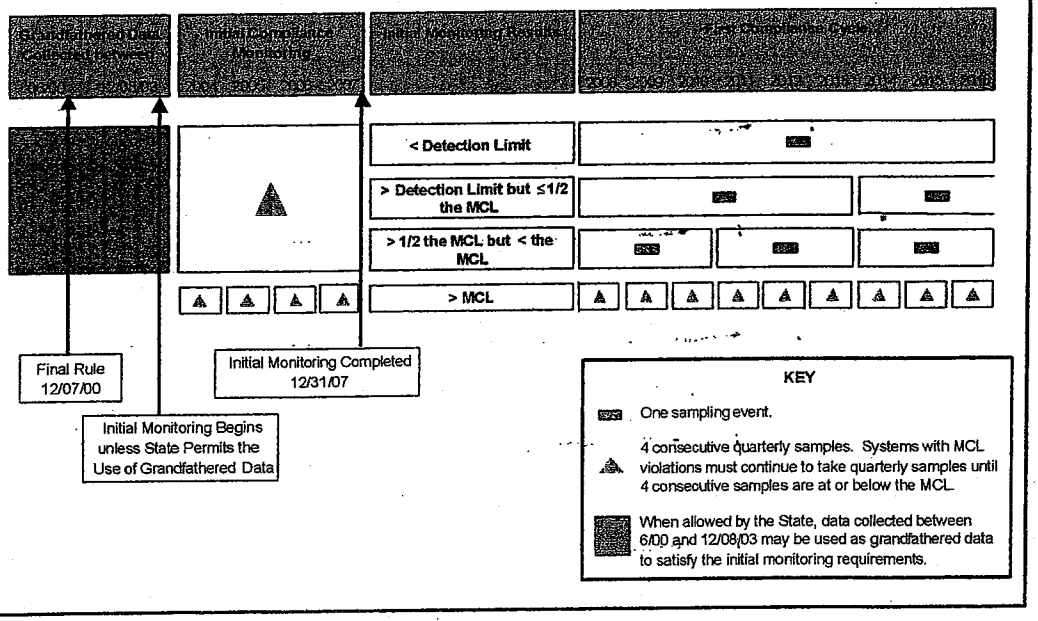
Grandfathering of Data

When allowed by the State, data collected between June, 2000 and December 8, 2003 may be used to satisfy the initial monitoring requirements if samples have been collected from:

- Each entry point to the distribution system (EPTDS).
- The distribution system, provided the system has a single EPTDS.
- The distribution system, provided the State makes a written justification explaining why the sample is representative of all EPTDS.

Applicability of the Standardized Monitoring Framework to Radionuclides

(Excluding the Beta Particle and Photon Emitters)



For additional information on the Radionuclides Rule

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA Web site at www.epa.gov/safewater; or contact your State drinking water representative. EPA will provide radionuclide training over the next year.

Section II. Water Quality

EXISTING WATER QUALITY

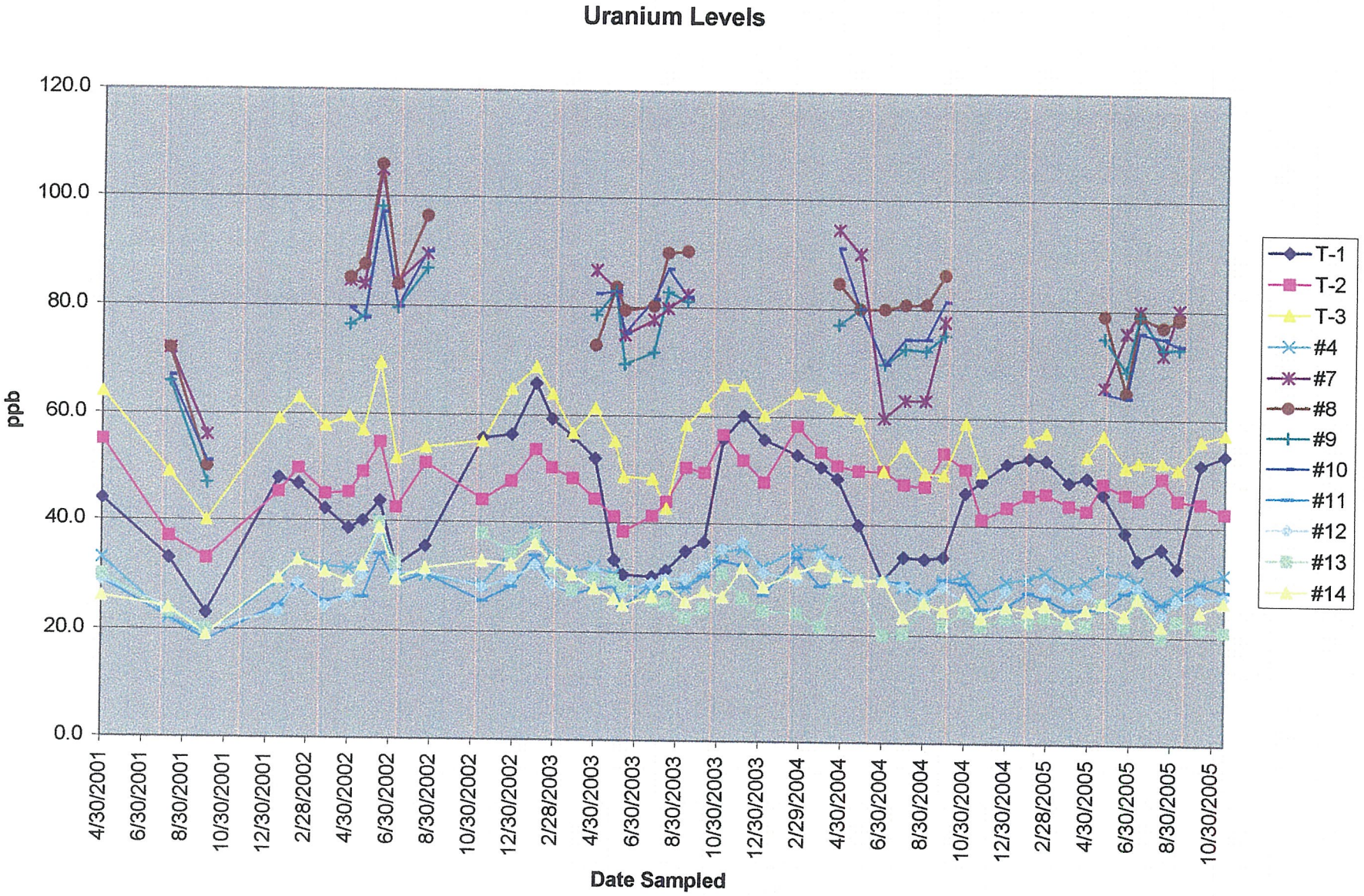
Gering's existing water source is derived from these three geologic formations or combination of there of.

- Alluvium i.e. Midtown Wells
- Brule i.e. Terrytown Wells and some VFW Wells
- Chadron – The Lockwood Well is Gering's only Chadron formation well

Arsenic is or can be associated with the Brule formation and in Gering's case is. uranium is not typically associated with the Brule however; Gering's Terrytown wells are higher in uranium than our other wells.

Arsenic

Gering initiated sampling in 2001 when the lower arsenic limit was adopted. Since that time more than 50 samples have been taken at each well and/or points of entry (P.O.E.). Sampling results are shown in Appendix A and the two graphs following. The first graph shows all well arsenic levels and the second graph shows only the Midtown well field arsenic levels.


Uranium Levels
120.0
100.0
80.0
60.0
40.0
20.0
0.0
ppb
4/30/2001
6/30/2001
8/30/2001
10/30/2001
12/30/2001
2/28/2002
4/30/2002
6/30/2002
8/30/2002
10/30/2002
12/30/2002
2/28/2003
4/30/2003
6/30/2003
8/30/2003
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4/30/2004
6/30/2004
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8/30/2005
10/30/2005
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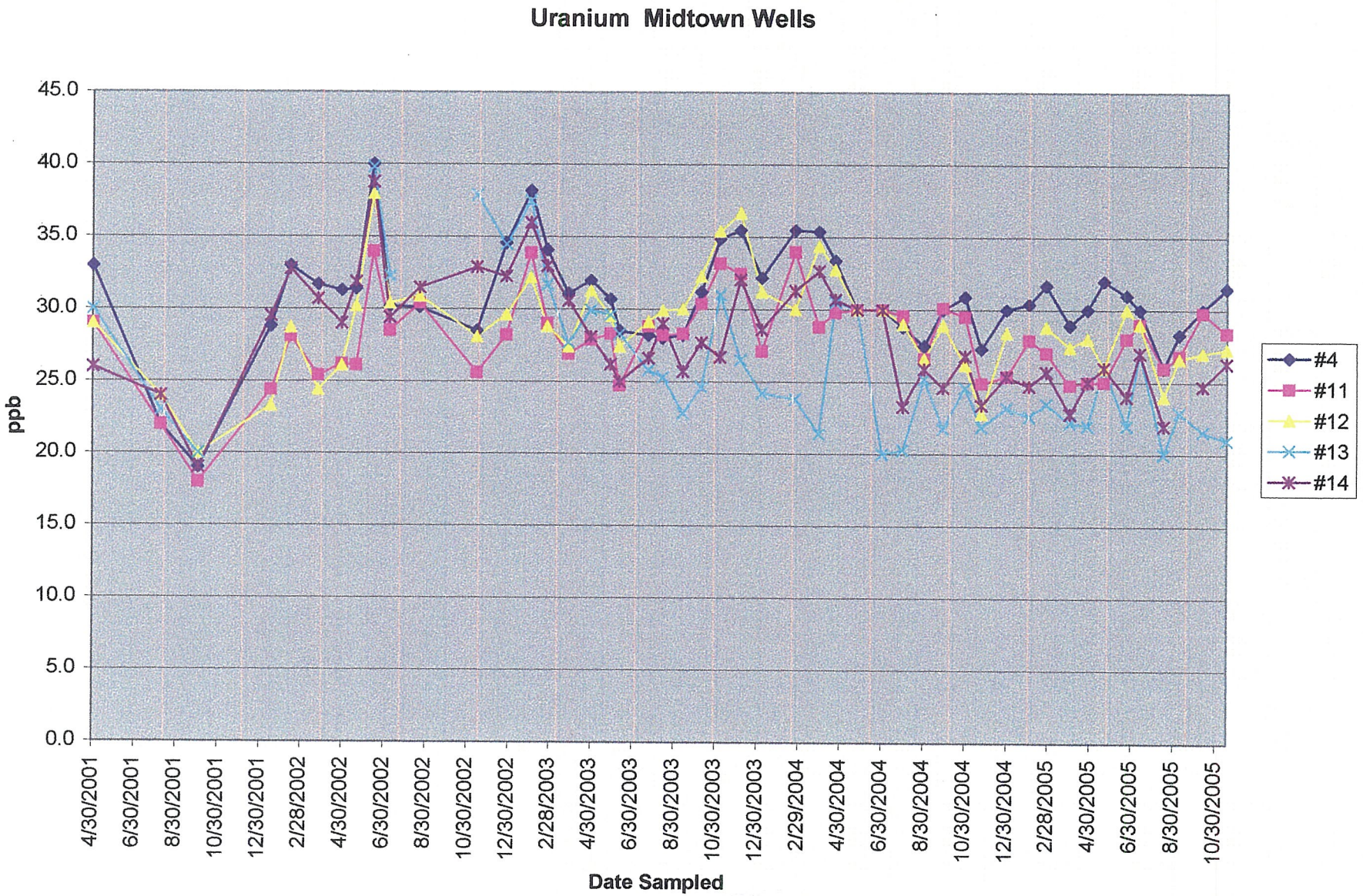
#14


Uranium Midtown Wells
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
ppb
4/30/2001
6/30/2001
8/30/2001
10/30/2001
12/30/2001
2/28/2002
4/30/2002
6/30/2002
8/30/2002
10/30/2002
12/30/2002
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2/29/2004
4/30/2004
6/30/2004
8/30/2004
10/30/2004
12/30/2004
2/28/2005
4/30/2005
6/30/2005
8/30/2005
10/30/2005
Date Sampled
#4
#11
#12
#13
#14

New Water Source

Background sampling

The City initiated sampling alternative water sources within the proximity of Gering and initiated contact with several land owners in two areas, one area North East and one area North West of Gering, both in the North Platte River Alluvium. Sampling results are shown on the aerial photo map attached in the back folder. The City was able to obtain a 35 acre parcel approximately 5 miles North West of Gering on land owned by Dan Gueck.

Test Holes were bid and drilled in November of last year and pumped and sampled in November 2005. The Gueck well field site and test hole locations are shown on Exhibit A following. Upon receiving the results in January 2006, there was a noted variation between labs for uranium results:

27.7 to 24.0 or 3.4 ppb or 12%
25.6 to 22.4 or 3.2 ppb or 12.5%

Since a new source is important and expensive for Gering, we decided to resample and send to 3 area labs. The second test of uranium samples varied similar to the first:

29.8 to 25.3 or 4.3 or 14%
27.4 to 22.8 or 4.6 or 17%

33.9 to 29.2 or 4.7 or 14%
31.8 to 27.3 or 4.5 or 14%

The Gueck well field sample results for arsenic and uranium are presented in three tables following:

Table II-1 – Arsenic and Uranium Samples – November 2005
Table II-2 – Arsenic and Uranium Samples – February 1, 2006
Table II-3 – Uranium Averages for both sample sets

Table II-1 - Arsenic and Uranium Samples
First sample – November 2005

Possible Well Field – Dan Gueck

Well Number	Uranium			Arsenic	
	Energy Lab	State Lab	Uranium Average	Energy Lab	State Lab
Test hole 1					
24 hr	27.6	24.7	26.15	3.0	2.55
48 hr	27.7	24.0	25.85	3.0	2.92
Test hole 2	25.6	22.4	24.0	6.0	5.32
Test hole 3	23.6	23.7	23.65	4.0	3.53
Test hole 4	19.2	17.1	18.15	2.0	<RL

Table II-2 - Arsenic and Uranium Samples
February 2006

Possible Well field – Dan Gueck
Second samples

		Uranium - ppb				Arsenic - ppb		
Well Number	Date Collected	Energy Lab	State Lab	Midwest Lab	Average	Energy Lab	State Lab	Midwest Lab
Test hole 1	2-1-06	29.8	25.3	26.0	27.0	3.0	3.4	3.0
Test hole 2	2.1-06	22.2	18.9	19.7	20.3	7.0	6.6	7.4
Test hole 3	2-1-06	27.4	22.8	24.2	24.8	4.0	4.0	4.2
Test hole 4	2-1-06	19.9	17.2	17.5	18.2	2.0	<2.0	1.7
Gueck Irrigation Well	2-1-06	30.4	26.0	27.2	27.9	5.0	4.9	5.5
River at Gueck Site	2-1-06	28.4	25.9	25.3	26.5	6.0	5.8	6.0
Tub Springs Creek	2-1-06	24.7	21.3	21.9	22.6	5.0	5.0	5.0
#4 Well	2-1-06	33.9	29.2	29.7	30.9	3.0	3.1	3.1
River at #4 Well	2-1-06	31.8	27.3	28.2	29.1	6.0	5.6	6.1

Table II-3 - Uranium – Average of Two Samples

Possible Well Field – Dan Gueck

Well Number	First Sample November 2005	Second Sample February 2006	Average
Test hole 1	25.9	27.0	26.5
Test hole 2	24.0	20.3	22.2
Test hole 3	23.7	24.8	24.3
Test hole 4	18.2	18.2	18.2
Total	23.0	22.6	22.8

Well samples and corresponding North Platte River and Tub Spring Creek samples are summarized following:

River Samples
Uranium - ppb

Midtown			Dan Gueck		
Date	**River**	**Well #4**	**River**	**Irrigation Well**	**Tub Springs**
2-24-03	32.0	34.1			
8-13-03	28.2	28.0			
9-29-03					Hwy. 26 24.8
7-12-05			18.0		
11-8-05			26.0		
11-20-05 Initial					
2-1-06 Second	29.1 ave.	30.9 ave.	26.5 ave.	27.9 ave.	22.6

1 - The North Platte River and Dan Gueck irrigation well were 26.5 to 27.9 ppb respectively or 3.7 to 5.1 higher than the test hole averages and within 10% - 3 ppb of the MCL. The State lab and Midwest lab were 25.9 and 25.3 or 25.6 average for the river at Gueck and 26.0 and 27.2 or 26.6 average for the Gueck irrigation well therefore again within 10% - 3 ppb of the MCL.

Discussion

Arsenic

The arsenic levels range from 2 to 6 in the first samples and 2 to 7 in the second sample, both being reasonable below the MCL of 10, though higher than we expected in the North Platte River Alluvium.

Uranium

The uranium levels range from a low of 17 to a high of 27.7 in the first samples and 17.2 to 29.8 in the second set of samples. The average of lab results ranged from 18.2 to 25.9 in the first samples and 18.2 to 27 in the second set. The average of averages for the first samples for the 4 test holes was 23.0 and 22.6 for the second and a combined average of 22.8. A uranium level of 23.0 ppb is 7 ppb or 23% below the MCL.

State lab results for the test holes averaged 22.4 in the first samples and 21.1 for the second sampling set, thus 7.6 ppb to 8.9 ppb or 25% to 30% below the MCL.

Combining equal parts of Gueck well field water @ 23 ppb with Midtown water @ 29 ppb would result in an average of 26 ppb, thus 4 ppb or 13% below the MCL. Using State lab averages for Gueck 22.4 to 21.1 or 21.75 average with Midtown @ 29 would result in an average of 25.4, thus 4.6 or 15% below the MCL.

As previously discussed, the variations in lab results for uranium have been in the range of 3.2 ppb to 4.7 ppb or 12% to 17%.

The State lab and Midwest lab generally varied less than 1 ppb and Energy lab averaged 3.6 ppb higher than the state. Using the average of the State lab and Midwest lab for the second set of test hole samples would result in an average of 21.5 ppb, thus 8.5 ppb or 28% below the MCL. Combining with Midtown @ 29 ppb would result in an average of 25.25 ppb, thus 4.75 ppb or 15.8% below the MCL.

There are two important considerations in regard to uranium water quality:

1. What is a reasonable safety factor?
2. What will be the long term variation in uranium source water?

The City of Scottsbluff has two wells located one mile southeast of the Gering-Gueck site. We obtained the uranium sampling history and it is presented following (Table II – 4) and graph II-4 Scottsbluff Uranium.

Discussion
Uranium – cont.

Scottsbluff's well #17 and #18 have averaged 28.5 and 25.4 respectively for 13 samples each over 5+ years. The annual averages have ranged from 21.5 low (2001) to 29.3 high (2002) to 25.1 in 2006. The average of the 26 samples is 27 ppb. Scottsbluff may sample well #17 and #18 as a P.O.E. otherwise well #17 running average would have been out of compliance for two quarters ending 8-1-05 (31.13) and 10-20-05 (30.82). Of the 26 samples, the high 37.3 and low 19.0 are not typical, without these two samples, the sampling variation would be from a low of 21.6 to a high of 32.2, a range of 10.6 ppb. Comparison with the average (27.0) indicates a variation of plus 5.2 ppb to minus 5.4 ppb or plus or minus 20%.

For comparison purposes Gering's test holes uranium were plotted vs. Scottsbluff's well #17 and #18. (See Graph II - 5)

The comparison of uranium samples for Gering's test holes (9 samples) vs. Scottsbluff's well #17 and #18 (26 samples over 5 years) is summarized following:

- Gering test holes average 22.38 to 21.05 vs. Scottsbluff #17 and #18 average 27.
- Gering uranium is 4.6 to 5.9 ppb less than Scottsbluff or 19%.
- Gering variation from average ± 4 ppb thus ± 19% using 21 averages or a variation of 13% of MCL
- Scottsbluff's first year sampling averaged 21.5; however since that time has averaged over 25, a 15%± increase.

The above comparisons only comprise 35 samples, since Gering has over 240 samples covering 2001 – 2005 for the Midtown wells #11 - #14 and well #4, the Midtown wells were plotted for comparison with Scottsbluff wells. (See graph II – 6)

Uranium – Comparison Scottsbluff and Gering Midtown wells – 266 samples 2001 – 2006:

- Annual averages seem to parallel each other
- 2001 to 2002 largest annual variation 6.8 ppb Gering and 7.8 ppb Scottsbluff or 23% and 26% of MCL
- Annual averages within 2 ppb except 2003 nearly 4 ppb

What if you add 7.5 ppb (25% of MCL) to the average of the test hole samples: 22.38 + 7.5 = 29.88 ppb and 21.05 + 7.5 = 28.55 ppb. The result is at the MCL or 1.45 ppb below the MCL.

What if you add the Gering variation from average ± 4 ppb to the average of the test hole samples: 22.38 + 4 = 26.38 ppb and 21.05 + 4 = 25.05 ppb. The result is 3.68 ppb to 4.95 ppb or 12 to 16.5% below the MCL.

Recommendations

- Take additional samples at the test holes, river and Tub Springs.
- Determine an acceptable safety factor.
  ANSI/NSF drinking water treatment unit standards require a 20% margin of safety for small (individual) point-of-use treatment devices.
- Have a third party review the following:
  - Uranium water quality data.
  - Assess safety factor.
  - Review implication of treatment with the possible new source uranium quality and smaller partial flow treatment.

City of Scottsbluff Public Water Supply
SPECIAL - Uranium Sampling History

Table II - 4

CITY SYSTEM

	WELLS								
SAMPLE DT	**#1**	**#3**	**#9**	**#10**	**#11**	**#12**	**#13**	**#17**	**#18**
7/9/2001	0.0170	0.0240	0.0210	0.0270	0.0140	0.0190	0.0210	not taken	not taken
11/19/2001	0.0210	0.0250	0.0220	0.0270	0.0150	0.0260	0.0240	0.0190	0.0240
4/29/2002	0.0209	0.0310	0.0240	0.0311	0.0183	0.0248	0.0267	0.0280	0.0263
7/30/2002	0.0254	0.0302	0.0278	0.0362	0.0193	0.0267	0.0292	0.0313	0.0295
12/3/2002	0.0248	0.0305	0.0280	0.0365	0.0185	0.0304	0.0289	0.0322	0.0284
3/26/2003	0.0212	0.0240	0.0238	0.0314	0.0177	0.0254	0.0268	0.0273	0.0259
7/21/2003	0.0188	0.0281	0.0227	0.0280	0.0154	0.0227	0.0250	0.0247	0.0216
10/7/2003	0.0232	0.0312	0.0277	0.0347	0.0188	0.0285	0.0301	0.0283	0.0277
1/20/2004	Out of Svc	0.0302	0.0253	0.0314	0.0172	0.0265	0.0283	0.0296	0.0269
5/4/2004	0.0205	0.0313	0.0253	0.0285	0.0247	0.0263	0.0253	0.0373	0.0264
7/14/2004	0.0206	0.0284	0.0244	0.0312	0.0168	0.0248	0.0259	0.0286	0.0231
8/1/2005	0.0240	0.0280	0.0250	0.0310	0.0160	0.0230	0.0270	0.0290	0.0220
10/24/2005	0.0253	0.0290	0.0256	0.0331	0.0176	0.0264	0.0267	0.0284	0.0242
1/23/2006	0.0240	0.0294	0.0255	0.0321	0.0177	0.0263	0.0262	0.0265	0.0237
Average	**0.0221**	**0.0286**	**0.0249**	**0.0312**	**0.0176**	**0.0255**	**0.0265**	**0.0285**	**0.0254**
Minimum	**0.0170**	**0.0240**	**0.0210**	**0.0270**	**0.0140**	**0.0190**	**0.0210**	**0.0190**	**0.0216**
Maximum	**0.0254**	**0.0313**	**0.0280**	**0.0365**	**0.0247**	**0.0304**	**0.0301**	**0.0373**	**0.0295**

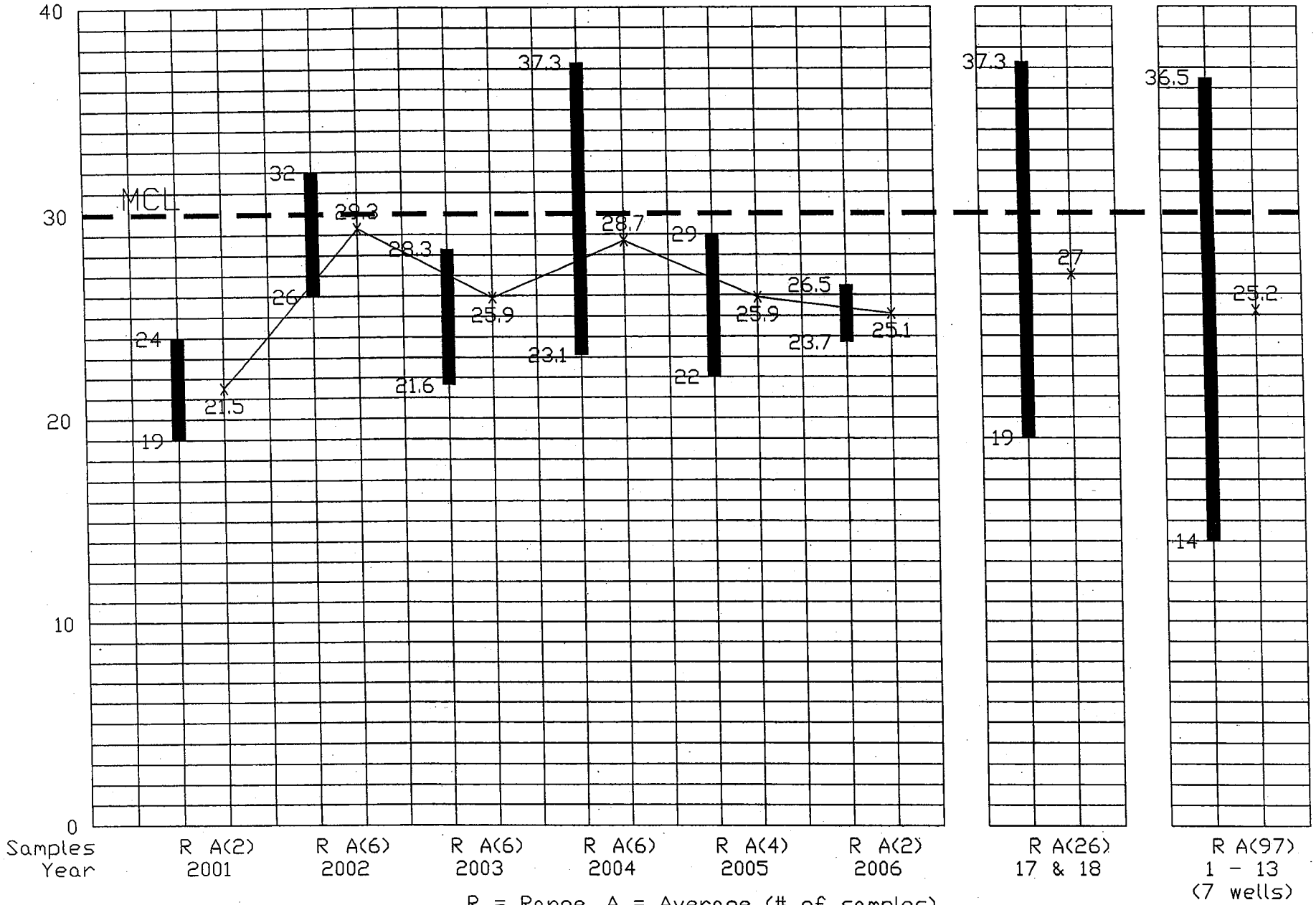
AIRPORT SYSTEM

	Wells	
SAMPLE DT	**#14**	**#15**
7/9/2001	not sampled	not sampled
11/19/2001	not sampled	not sampled
4/29/2002	0.0177	0.0180
7/30/2002	0.0206	0.0210
12/3/2002	0.0204	0.0206
3/26/2003	0.0175	
7/21/2003	0.0160	
10/7/2003	0.0205	
1/20/2004	0.0183	
5/4/2004	0.0178	
7/14/2004	0.0168	
8/1/2005	0.0170	0.0160
10/24/2005	0.0198	0.0182
1/23/2006	0.0176	0.0187
Average	**0.018**	**0.020**
Minimum	**0.016**	**0.018**
Maximum	**0.0206**	**0.021**

Specials

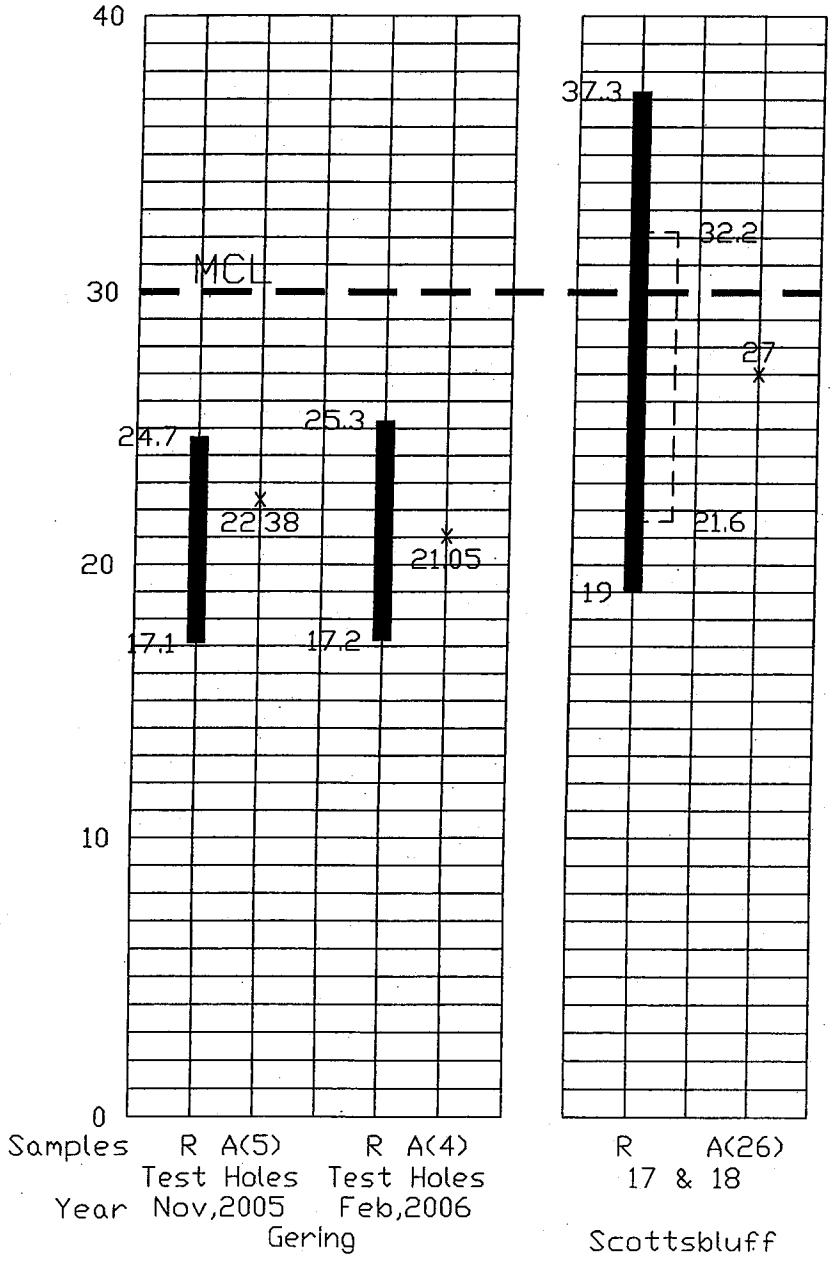
W. 20th & Ave. V	0.0290	1/20/2004
	0.0319	5/4/2004
	0.0291	7/14/2004
23rd & Broadway	0.0302	1/20/2004
	0.0291	5/4/2004
	0.0278	7/14/2004
Coke Tower	0.0296	1/20/2004
	0.0298	5/4/2004
	0.0305	7/14/2004
1209 E 20th St.	0.0290	1/20/2004
	0.0311	5/4/2004
	0.0319	7/14/2004
Soccer Field	0.0241	7/14/2004
Lacy Park	0.0320	38182.000

GRAPH II-4: Scottsbluff Uranium
Scottsbluff Wells #17 & 18
Uranium ppb



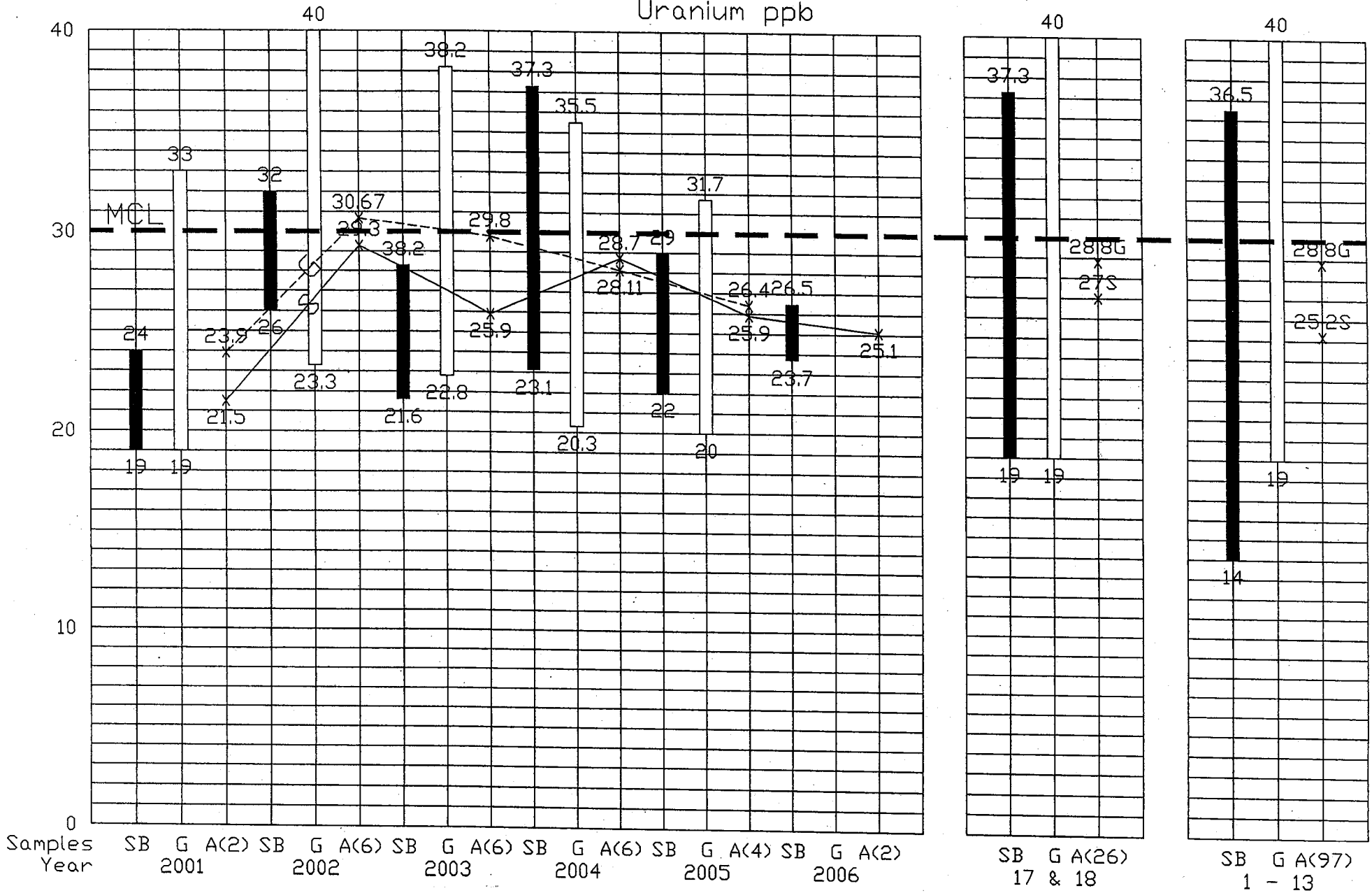
R = Range, A = Average (# of samples)

GRAPH II-5
Comparison of Gering Test Holes (State Lab)
vs. Scottsbluff Wells #17 & 18
Uranium ppb



R = Range, A = Average (# of samples)

GRAPH II-6: Uranium Comparison
Scottsbluff Wells #17 & 18 vs.
Gering Midtown Wells #4 & 11 - 14 (240 samples)
Uranium ppb



SB = Wells 17 & 18 Range, G = Wells Range, A = Average (# of samples)

Section III Water Quantity
Background/Economics of Water System Design

The economical period of design of water system components is related to the components length of life, first cost, ease and cost of increasing capacity and the possibility of new regulations or obsolescence. Water system components also require different consumptions for design.

Water Source

The design period depends on the type of source.

With well sources, it is relatively easy to drill additional wells and design periods may be reasonable short, say 5 – 10 years. Generally, the design consumption will range from annual average to peak daily use.

Pipelines from source to City.

The design relates to pipe life; however design periods are typically longer, 50 years or more. The design consumption will depend upon the amount of storage provided in the City. Generally, the average annual consumption may be used, but in arid areas like Gering, peak summer irrigation uses normally control.

Water Treatment Plant

Design periods are usually 10 – 15 years as additions can generally be made easily. Consumptions required are annual average, maximum day and possible maximum weekly.

Pumping Plant

The design period is usually 10 years. Consumptions needed are maximum hourly, minimum hourly and fire demand.

Storage needed or advisable

The design period is usually 20 years. The consumptions needed are average annual, fire demand, maximum hourly and maximum monthly.

Distribution System

The design period is indefinite, however may be limited to pipeline material life and the capacity of the system should be made adequate for the highest development of that portion of the City it serves, i.e. density of population and type of development.

Consumptions are normally maximum hourly with fire demand added.

Existing Water Source

Gering's existing water source is from three well fields; the Midtown well field consists of 5 wells totaling 4700 gpm and the original design layout proposed a total source capacity of 10,000 gpm.

The Terrytown well field consists of 3 wells with a capacity of 4,000 gpm.

The VFW well field consists of 4 wells with a capacity of 1, 450 gpm and is normally only used during summer peak use periods because the nitrate levels are at or very close to the MCL of 10.0 mg/l. The VFW wells are the last wells on and when combined with the other water sources the system nitrates are well below the MCL.

Appendix E-1 shows monthly water use by user classification for residential, rural residential, commercial, industrial and City use based upon actual metered use/billings for 2005. Appendix E-2 is a monthly breakdown of 2005; billing showing number of customers, average customer uses and income per 1000 gallons sold.

Following is a summary of the Cities existing water sources and water uses for the three year period, 2003 – 2005.

Table III - 1
Existing Water Source

Midtown Wells				
Description	**Year**	**HP**	**Quantity - gpm**	
Well #4	1979	75	700	
Well #11	1990	125	1000	
Well #12	1990	125	1000	
Well #13	1990	125	1000	
Well #14	2000	125	1000	
POE #11 - #14			4000	
Subtotal			4700	
Terrytown Wells				
T-1	1961	150	1550	
T-2	1965	125	750	
T-3	1965	200	1700	
POE - T-1 to T-3			4000	
Subtotal			8700	
VFW Wells – peak use – high nitrate nitrates in ()				
Well #7	1953	Sub 50	500	(11)
Well #8	1958	60	400	(8)
Well #9	1957	50	265	(9)
Well #10	1957	40	285	(12)
POE - #7 - #10			1,450	
Subtotal			10,150	
Swift				
#6 Lockwood	1976	50	270	(9.3)

Midtown Wells

Well #11 - #14
Static – 11ft – 12ft
PWL – 25 – 30ft

- Motors – 10" Submersible Hitachi – 125hp
- Pump Gould's – 12RJMC 1760rpm
  Inlets set @ 51 – 53ft
- Screen – 25' Johnson 100 slot
  Set @ 53' – 78' or 55' – 80' w/3ft blank
  55ft ± gravel pack
  26" drilled hole
  16" casing/screen

Table III – 2
Gering Water Use

Water Use – Annual & Averages

Year	Annual Use – MG	Monthly Average Use – MG	Daily Average Use (Monthly / 30.4)	G/C/D W/7750
2005	1,053	87.7	2.886	372
2004	1,140	95.0	3.125	403
2003	1,184	98.66	3.245	419

Water Uses – Peak Month (PM)

Year	Month	Use – PM – MG	Average Daily PM- MG	GPM Use 24 hr
2005	July	191	6.28	4,361
2004	August	157	5.16	3,583
2003	July	201	6.6	4,583

Water Use – Peak Day

Year	Month	Day	Use – MG	24 hr	GPM Use – 20 hr	18 hr
2005	July	14	7.7	5,348	6,417	7,130
2004	June	15	7.3	5,070	6,080	6,760
2003	August	21	8.4	5,833	7,000	7,777

Planning – Projected Water Use

The last water master plan was prepared by Wells Engineering in 1987. For comparison – verification purposes, the Wells Engineering design information from the mid 1980's is reviewed with recent 2003 – 2005 metered water uses, population projections, etc.

Historic Water Use

The previous water plan estimated water use based upon electric meter pumping records as follows:

Year	Annual Average Daily - MG	Maximum Day - MG
1982	3.98	8.0
1983	2.78	7.18
1984	2.80	7.16
1985	2.97	7.04
1986	2.12	7.25
Average	2.93	7.33

Following is a comparison of recent water use based upon metered use

Year	Annual Average Daily – MG	Maximum Day – MG
2003	3.245	8.4
2004	3.125	7.3
2005	2.886	7.7
Average	3.085	7.8

Population Projections

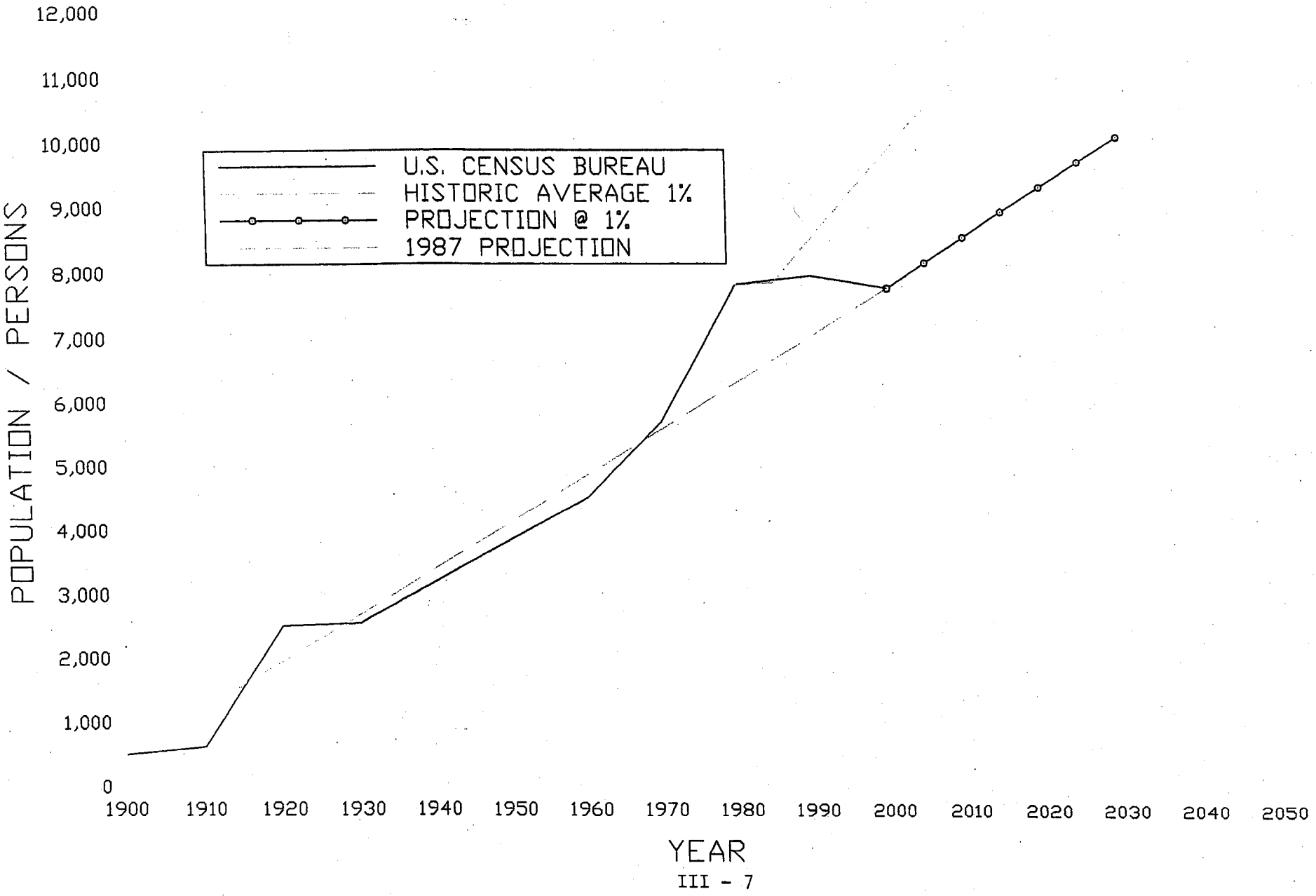
The 1987 water master plan used a 1980 population of 7760 and projected a 2005 population of 10,500 or a growth of 2,740 people in 25 years thus 110 people/year.

The historic 1900 to 2000 growth rate has averaged 73 people/year or a 1% growth rate. Following is presented population projections based upon the historic 1% rate of growth:

Year	Design Population	Population
2000		7751/Census
2005	Start	8,140
2010	5 yr.	8,525
2015	10 yr.	8,915
2020	15 yr.	9,300
2025	20 yr.	9,690
2030	25 yr.	10,075

Following is a graph of historic population (Census Data) and projected population based upon 1% growth rate. (See Table III-3)

POPULATION PROJECTION
GERING, NEBRASKA



Per – Capita – Uses

The mid 1980's population was 7,853 thus per-capita-uses were as follows for the mid 1980's:

Per-capita use (g/c/d) 1980's

Annual Average Daily	2.93 ÷ 7853 =	373
Average Maximum Day	7.33 ÷ 7853 =	933
Peak Day 1982	8.00 ÷ 7853 =	1019

Comparing with water use 2003 – 2005 and estimated population based upon year 2000 population of 7,751 and the historic growth rate 1900 – 2000 of 1% results in a 2004 population of 8,060.

Per – Capita –Use (g/c/d) - 2004

Annual, Average, Daily	3.085 ÷ 8060 =	382
Average, Maximum, Day	7.8 ÷ 8060 =	968
Peak Day 2003	8.4 ÷ 7995 =	1050

The Per – Capita – Uses are essentially the same from the 1980's to year 2004.

Fire Flows

The previous water plan selected numerous locations within the City and applied ISO guidelines resulting in a maximum fire flow of 3,900 gpm for 3 hours at two locations. Fire flows remain the same.

Projected Design Maximum Day Uses

The historic highest maximum daily water pumped is 8.4 mg or 1,050 g/c/d with a population of 7,995. Based upon a 1% rate of growth the design max day uses would be as follows:
(See Table III-4)

Table III – 4
Projected design – maximum daily use

Year	Design Year	Population	Historic Peak Day Use – per capita gallons	Peak Day Use (MGD)	Design Maximum day 24 hour average use (gpm)	ADD Fire Flow (gpm)	Projected Design Maximum Day Use (gpm)
	2003	7,995	1,050	8.4	5,835	3,900	9,735
2005	Existing	8,140	1,050	8.55	5,935	3,900	9,835
2010	5 year	8,525	1,050	8.95	6,215	3,900	10,115
2015	10 year	8,915	1,050	9.36	6,500	3,900	10,400
2020	15 year	9,300	1,050	9.76	6,780	3,900	10,680
2025	20 year	9,690	1,050	10.17	7,065	3,900	10,965
2030	25 year	10,075	1,050	10.58	7,350	3,900	11,250

Discussion

Storage

Storage is a long term decision balancing pumping demand, reliability, system pressures, location, piping net work, etc. and fire protection.

Fire protection flows were estimated at 3,900 gpm for 3 hrs or 702,000 gallons. Gering's existing storage tank is 1.0 MG.

It should be noted that the previous water plan estimated a total storage requirement of 1.4 MGD or an additional 400,000 gallons based upon maximum day consumption of 8 MG or 5,560 gpm average for 24 hrs and recommended adding 600,000 gallons additional storage for a design population at 10,500.

As a minimum, the City should add an additional 1 MG ground level storage at the existing tank site.

Water Source Design

From the projected design – maximum daily use table, the maximum total water source to continue unlimited peak day use of 8.4 MG is 6,000 gpm based upon 24hrs pumping and fire flow from storage. This would not allow for wells to be out of service for repairs or maintenance during the peak use period June – September or 4 months.

A reasonable design minimum source should include operating flexibility to allow 1 – 2 wells to be out of service and/or pumping less than 24 hours per day. For Gering's existing population and peak use the minimum total water source should be 7,500 gpm to 8,500 gpm.

As growth occurs the peak day use increases 280gpm every 5 years or a total of 1,130 gpm in 20 years or by 2025. An additional well should be drilled in 10 years or population reaching 9,000.

Relationship to Water Quality

Gering's existing Midtown Well field is acceptable for arsenic averaging 3.5 ppb, however; uranium levels are at the MCL of 30 ppb.

Assuming the Midtown Well field remains a source of 4,700 gpm, the City needs to locate an additional source of 2,800 to 3,800 gpm to provide a total source of 7,500 – 8,500 gpm for the existing City. Ideally, a new source equal to the Midtown source capacity of 4,700 gpm with uranium levels in the low 20's would result in a total source of 9,400 gpm and uranium averaging in the mid 20's.

Section IV Evaluation of Alternatives

General

Gering has two alternatives to produce EPA approved water quality:

1. Locate a new replacement water source for the Terrytown and VFW wells that will meet the arsenic and uranium levels and combine the new source with the existing Midtown source.

2. Construct a water treatment facility to bring uranium levels to less than the 30.0 ppb MCL. The facility would only need to treat a portion of the water source – split treatment and then combine the treated water with untreated water resulting in a uranium concentration of less than the MCL.

Alternative #1
New Replacement Water Source

The City sampled water quality east and west of Scottsbluff and approached several land owners to option property for a new source. The City optioned a parcel from Dan Gueck on the west side of Scottsbluff in August 2005 and bid and drilled test holes and sampled as previously discussed in this review.

The new replacement water source would operate as follows:

- Three to four wells would be drilled to replace the Terrytown and VFW wells. (4,700 gpm)

- Water would be pumped from the wells to a storage tank in the area of the existing Midtown wells and combine (blended) with the Midtown well source to meet water quality criteria.

- Combining the two sources at a single point offers the City the flexibility of treatment now or in the future.

- A pump station would transfer water from the tank combined source to the water system.

- The existing Midtown wells would be redone to pump to the new tank. Well #4 may remain as standby to the system since it is equipped with a right-angle drive, or it may be redone also.

A preliminary construction cost estimate for this option is presented following:

Table IV – 1
Well Field to Storage Tank

Alternative #1
Preliminary Construction Cost Estimate

Item	Description	Construction Cost Estimate
1.	Well Field Site 36 ac. @ $5,000/ac Phase I Test hole drilling	$200,000.00
2.	3 Wells @ 1,567 gpm 4,700 gpm – 6.77 MGD	$420,000.00
3.	Well field piping site work	$50,000.00
4.	24" Transmission Pipeline 34,000 ft. @ $90 (Final design may reduce by $20/LF for 27,000' or ($540,000)	$3,060,000.00
5.	1.0 M.G. ground level tank	$450,000.00
6.	Pump Station, approx. 8,000 gpm (4 pumps, room for 2 additional)	$400,000.00
	Subtotal – Estimated Construction Cost	$4,580,000.00
	Add 25% Construction, Engineering & Misc.	$1,145,000.00
	Total Phase I Budget	$5,725,000.00

Phase II

1.	1.0 MG Ground Level Storage Tank Next to Ex. 1.0 MG at cemetery	$450,000.00
2.	Redo existing Midtown pumps (5)	$42,000.00
	Subtotal – Estimated Construction Cost	$492,000.00
	Add 25% Construction, Engineering & Misc.	$123,000.00
	Total Phase II Budget	$615,000.00
	Total Budget Phase I and Phase II	$6,340,000.00

Alternative #2
Water Treatment Plant

The preliminary feasibility study was prepared by McLaughlin Rincon in June of 2004 and is included under separate cover.

The cost estimates following have been revised is scope and cost estimates updated for comparison purposes as follows:

- New 1.0 MG ground level tank at site of existing tank.
- Deleted well at Oregon Trail Park.
- The bench scale testing of the lime softening plant $20,000 can be taken out of operations.
- Added 10% to cost estimates for inflation 2004 – 2006.

Disinfection By-Products

. Total trihalomethanes (TTHMs)

Total Suspended Solids (TSS)

Turbidity

Microbiological

. Total Coliform (Coliform bacteria, fecal coliform, streptococcal, and other bacteria)
. Giardia lamblia
. Legionella
. Viruses
Heterotrophic Plate Count
. Iron and Iron-related bacteria

Radiological Contaminants

. Gross alpha
. Gross beta
. Radium 226 & 228 (combined)
. Natural uranium

Secondary Standards

. Aluminum
. Bicarbonate
. Boron
. Calcium
. Carbonate
. Chloride
. Color
. Conductance
. Corrosivity
. Foaming agents
. Hardness
. Iron
. Magnesium
. Manganese
. Odor
. Ph
. Potassium
. Silica
. Silver
. Sodium
. Sulfate
. Total Acidity
. Total Alkalinity
. Total Dissolved Solids (hardness)
. Zinc

All analyses will be listed in the final report, as well as the reasons for deleting the analyses for any items contained in this list.

The Consultant shall determine the water treatment requirements for the groundwater supply source and include costs for this treatment in the final report.

The Consultant shall reclaim the drill site including backfilling all pits and disposing of any drilling mud in appropriate facilities, re-grading the land surface to approximately its original contour, removing all trash, and reseeding with a seed mix approved by the Office project manager.

If authorized in writing by the Office project manager, the Consultant shall abandon the well according to regulations promulgated by the WSEO and the WDEQ.

Task 6 Well Construction Subcontracts

a. The Consultant shall obtain the services of a well construction subcontractor(s) as appropriate (See Phase I Task 4) to perform the tasks described herein.

b. The Consultant shall determine the increase in premiums for their Professional Liability or Errors and Omissions Liability Insurance resulting from their well construction subcontract(s). The Consultant will provide documentation relating to the incurred increase to the Office project manager.

PHASE II – CONCEPTUAL DESIGNS, COST ESTIMATES, & REPORTS

Task 1 Geotechnical Analysis

The Consultant shall perform all geological and geotechnical investigations as needed for conceptual designs and cost estimates of the proposed systems. This analysis may include both field analysis and laboratory testing and analysis.

Task 2 Identification of Alternatives

The Consultant shall identify and evaluate reasonable alternatives for supply, transmission, treatment, and distribution components, and incorporation of existing system infrastructure. The impact of the various alternatives on operation and management shall be considered. The treatment component shall be assessed on a basis of present –day water quality ranging to a worst-case scenario of radionuclide and arsenic constituents exceeding maximum contaminant levels (MCL's) established by U.S. EPA primary drinking water standards.

Task 3 Preparation of Preliminary Cost Estimates

The Consultant shall prepare preliminary cost estimates to allow the Office project manager, in consultation with the Sponsor, to select those improvements that are cost effective and within the Sponsor's ability to pay.

Task 4 Selection of Preferred Alternatives

The Consultant shall meet with the Sponsor and the Office project manager to assist in the selection of those project components to be recommended for advancement.

Task 5 Conceptual Designs and Cost Estimates

The Consultant shall prepare conceptual designs for the water supply components selected in Task 4, as instructed by the Office project manager. This may include well completion equipment, pumping facilities, pipelines, power transmission facilities, storage facilities, etc., and any other appurtenances necessary to make the system function in the manner intended. The Consultant shall include maps, drawings, and other items to clearly present their proposed conceptual designs.

The Consultant shall prepare construction cost estimates in tabular form for each of the system improvement options selected in Task 4. The table will be broken down into both Commission eligible and non-eligible costs. Cost estimates for each infrastructure improvement shall be prepared as outlined in Section C of this Scope of Services

The Consultant shall also prepare a life-cycle cost analysis for the infrastructure improvements identified in Task 4. This analysis should estimate the life cycle of each component including operation, maintenance, and replacement costs.

The construction cost estimates will include costs of design, permitting, land acquisition, construction engineering, construction, and construction contingencies. The cost estimates should be based on the year this study is completed. The Consultant shall work with the Office project manager to determine an appropriate inflation factor that will be applied to the project's current year total cost and projected into the future per the schedule of activities and time-lines developed in Task 4.

Task 6 Identification of Permits and ROW for Construction

The Consultant shall identify any permits, right-of-ways (ROWs), easements, and/or access that may be required for implementation and emplacement of the recommended alternatives.

Task 7 Environmental Report

The Consultant shall assume a budget of $7,500 for this task.

The Consultant shall not begin work on this task unless specifically authorized in writing by the Office project manager.

- Note: The WDEQ-Water Quality Division (WQD), which administers the Drinking Water State Revolving Fund (SRF), has indicated that in order to be eligible for SRF funds, the completion of an Environmental Report shall precede the drilling of the

exploration well. This will give the Sponsor the flexibility to utilize federal funds along with Commission funds. Prior to drilling, SRF funding eligibility shall be determined by the Consultant on behalf of the Sponsor.

Several sources of federal funding are available to public entities to help defray costs associated with construction of a water related project. These monies may also be used to fund portions of the construction that the Commission cannot pay for such as distribution and treatment. In order to secure federal funds, it is necessary to comply with the National Environmental Policy Act (NEPA).

The primary objective of this task is to provide adequate information for state and federal funding agencies to prepare environmental documents required under NEPA (42 U.S. C. 4321) for this project. This is done by preparing an "Environmental Report" (ER).

Before beginning this task the Consultant, in close coordination with the Sponsor and Office project manager, shall determine whether the sponsor will be seeking funding from State Revolving Fund (SRF) or the Rural Utilities Service (RUS). If the sponsor is seeking funding from the SRF then they shall download the guidance document from the following website and contact Brian Mark at the phone number listed in the document.

http://deq.state.wy.us/wqd/www/srf/Downloads/revolvingfunds_files/ea-crosscut.pdf

If the sponsor is seeking funding from the RUS then the Consultant shall download RUS Bulletins 1794A – 600, 601, and 602 at the following website and contact Alana Cannon, the Community Programs Director at (307) 233-6706.

http://www.rurdev.usda.gov/wy/docs/wy-supplement-environmental.doc

The Consultant shall send the letters described in the documentation, compile the responses, and provide a summation of potential impacts to each of the resources listed in the following section. If the sponsor is seeking funding from both agencies, the Consultant shall send the letters listed for each agency and compile the information gathered separately.

The Consultant shall prepare an ER and summarize the information from the letters in the following format:

A. Purpose and Need for Project
    -Project Description
    -Purpose and Need of Project

B. Alternatives to the Proposed Action

C. Affected Environment/Environmental Consequences
    -This portion of the report should address the following items:
        Land Use
            General Land Use/Important Farmland, Prime Forest Land and Prime Rangeland/Formally Classified Lands

Affected Environment
Environmental Consequences
Mitigation

Flood Plains
- Affected Environment
- Environmental Consequences
- Mitigation

Wetlands
- Affected Environment
- Environmental Consequences
- Mitigation

Cultural Resources
- Historic Property; Visual Aesthetics
  - Affected Environment
  - Environmental Consequences
  - Mitigation

Biological Resources
- Threatened and Endangered Species;
- Fish and Wildlife; Vegetation
  - Affected Environment
  - Environmental Consequences
  - Mitigation

Water Quality Issues

Surface Water; Ground Water
- Affected Environment
- Environmental Consequences
- Mitigation

Coastal Resources (not applicable in Wyoming)

Socio-economic Issues/Environmental Justice
- Affected Environment
- Environmental Consequences
- Mitigation

Miscellaneous Issues
- Air Quality
- Affected Environment
- Environmental Consequences
- Mitigation
- Transportation
- Noise

D. Summary of Mitigation (for each resource)

E. Correspondence and Coordination
All related correspondence from the agencies should be included in this section.

F. Exhibits
Include any supporting maps, photographs, etc.

G. Landowner Consents

The ER will be a separate document from the project report described in Phase II Task 9, and is not considered complete until all letters and follow up phone calls have been completed with appropriate Federal and State environmental regulatory agencies.

The Consultant shall provide cost analysis of mitigation requirements outlined in Section D of the ER.

If any regulatory agency's correspondence indicates that the potential exists to impact resources under their jurisdiction, additional field assessments may be necessary to confirm impacts and to recommend mitigation. Field assessment work will be completed under the initial construction phase of Level III.

Additionally, the Consultant shall summarize the work that is left to be completed for the NEPA requirements in the project report, and make sure the project sponsor is aware of the remaining tasks to be completed.

Task 8 Reports

The Consultant shall submit to the Office five (5) hard copies of a draft report describing the results of all work completed in this study no later than July 1, 2012. Five (5) CD/DVD copies containing the draft report in a Searchable Image Adobe Acrobat (pdf) format will also be provided, and two (2) CD/DVD copies of the draft ArcGIS coverages (if applicable). The digital report will be completely assembled into one standalone Acrobat file, and will be the same version as the hard copy. Each CD/DVD shall have a hard copy table of contents attached.

After receipt and incorporation of the Office and the Sponsor's review comments, the Consultant shall submit all final documents and materials to the Office on or before September 1, 2012. These final documents and materials shall include: 1) Twenty (20) hard copies and one (1) unbound reproducible original of the final report and 2)Twenty (20) hard copies and one (1) unbound reproducible original of the executive summary. The unbound originals shall have original seals/signatures pursuant to Section C. above. The summary shall outline the purpose, findings, recommendations and configuration of the project, and shall include detailed cost estimates. The summary should not exceed ten (10) pages.

Eleven (11) CD/DVD copies containing the final report and executive summary in a Searchable Image Adobe Acrobat (pdf) format will be provided. The digital report will be completely assembled into one standalone Acrobat file for each report, and will be the same version as the hard copy. Each CD/DVD shall have a hard copy table of contents attached.

Additionally, three (3) CD/DVD copies containing the final report and executive summary in both Microsoft Word and Searchable Image Adobe Acrobat (pdf) formats will be provided. The digital reports will be completely assembled, contained in one Word file and one Acrobat file for each report, and will be the same version as the hard copies. The CD/DVDs shall also contain the project digital files in their original format (Word, Cad, Excel). Each CD/DVD shall have a hard copy table of contents attached.

One (1) project notebook containing the working files used in this project will be provided. The project notebook files shall include descriptions of the assumptions and methodologies used in the project analysis. The notebook shall be organized in such a way as to allow replication of the steps, calculations, and procedures used by the Consultant to reach the conclusions described in the final report.

If any wells are drilled, chip trays or vials of all washed well drilling cuttings shall be submitted along with their documentation.

ATTACHMENT "C"
PRICE PROPOSAL SUMMARY
LANCE CREEK WELL, LEVEL II STUDY

Task		Estimated Cost
Phase I	**Meetings, Drilling/Testing Program**	
Task 1	Meetings	$ _____
Task 2	Well Siting, Permits, Drilling/Testing Program	$ _____
Task 3	Bid Specifications, Bid Process	$ _____
Task 4	Consultant Services During Well Construction/Testing	$ _____
Task 5	Water Quality, Treatment, Reclamation	$ _____
Task 6	Well Construction Subcontracts	$ _____
	SUBTOTAL PHASE I TASKS	**$** _____
Phase II	**Conceptual Designs, Cost Estimates, Reports**	
Task 1	Geotechnical Analysis	$ _____
Task 2	Identification of Alternatives	$ _____
Task 3	Preparation of Preliminary Cost Estimates	$ _____
Task 4	Selection of Preferred Alternatives	$ _____
Task 5	Conceptual Designs and Cost Estimates	$ _____
Task 6	Identification of Permits and ROW for Construction	$ _____
Task 7	Environmental Report	$ 7,500
Task 8	Reports	$ _____
	SUBTOTAL PHASE II TASKS	**$** _____
	PROJECT TOTAL COST	**$** _____

Firm Name and Address: _____

_____

_____

_____

Signature of Firm President or Authorized Agent: _____

Employer Identification Number: _____

Nebraska Health and Human Services
Regulation and Licensure
P.O. Box 95007
Lincoln, Nebraska 68509
402-471-2541

NEBRASKA HEALTH AND HUMAN SERVICES SYSTEM

PUBLIC WATER SUPPLY
Inspection Report

SCOTTS BLUFF CO.

System Name CITY OF GERING Account Number NE31-1571 7

Person Contacted PAT HEATH Title DIRECTOR OF PUBLIC WORKS Phone

Inspector DOUG ALLEN Phone

Type Inspection: 01 Sanitary Survey for Cause 02 Construction 03 Final
04 Site 05 Other TECHNICAL ASSISTANCE.

REMARKS LOOKED AT TRACT OF LAND GERING IS LOOKING AT FOR POSSIBLE WELLFIELD NE OF GERING ABOUT 5 MILES. LAND CONSIST OF ABOUT 36 ACRES, WITH AN OPTION OF OBTAINING AN ADDITIONAL 20.5 ACRES SOUTH OF THIS SITE. LAND IS BORDERED BY THE NORTH PLATTE RIVER TO THE WEST, WITH NO POSSIBLE DEVELOPMENT. NORTH & SOUTH OF LAND IS DITCH IRRIGATED CROP LAND. EAST OF LAND IS A STRIP OF LAND OWNER WANTS TO RETAIN FOR A HOUSING DEVELOPMENT OF 2 ACRE LOTS, PLACEMENT OF CITY WELLS WOULD BRING WESTERN HALF OF THOSE LOTS INTO THE 1000 FT. TRACT OF LAND IS NOT IN THE 100 YEAR FLOOD PLAIN & IS ABOUT 20 FT ABOVE RIVER BANK. SITE IS UNACCEPTABLE DUE TO IRRIGATION WELL IN NW CORNER. CITY'S PLAN UPON PURCHASE, IS TO ABANDON THAT WELL. ALSO TO BE CONSIDERED IS CONSTRUCTION STANDARD OF DOMESTIC WELL FOR LOT USE OF WELL SITE THAT FALLS WITHIN THE 1000 FT. GPS NE CORNER = N 41 53 11.7, W 103 43 00.7, NW CORNER N 41 53 11.7, W 103 43 17.1, SE CORNER = N 41 52 59.5, W 103 43 00.8

Inspector's Signature Doug Allen

Report Received By: 7-12-05
Signature Date

WHITE COPY - Lincoln office YELLOW COPY - system PINK COPY - field office PHA-9 Rev. 3/05 (24519)