

APPENDIX K

*WATER QUALITY MONITORING
PLAN*



Water Quality Monitoring Schedule

System: RICHLAND, CITY OF
Contact: John Finch

PWS ID: 72250 W
Group: A - Comm

Region: EASTERN
County: BENTON

NOTE: To receive credit for compliance samples, you must fill out laboratory and sample paperwork completely, send your samples to a laboratory accredited by Washington State to conduct the analyses, AND ensure the results are submitted to DOH Office of Drinking Water. There is often a lag time between when you collect your sample, when we credit your system with meeting the monitoring requirement, and when we generate the new monitoring requirement.

Coliform Monitoring Requirements

| | Jun 2016 | Jul 2016 | Aug 2016 | Sep 2016 | Oct 2016 | Nov 2016 | Dec 2016 | Jan 2017 | Feb 2017 | Mar 2017 | Apr 2017 | May 2017 |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Coliform Monitoring Population | 53080 | 53080 | 53080 | 53080 | 53080 | 53080 | 53080 | 53080 | 53080 | 53080 | 53080 | 53080 |
| Number of Routine Samples Required | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |

- Collect samples from representative points throughout the distribution system.
- Collect required repeat samples following an unsatisfactory sample. In addition, collect a sample from each operating groundwater source.
- For systems that chlorinate, record chlorine residual (measured when the coliform sample is collected) on the coliform lab slip.

Chemical Monitoring Requirements

Distribution Monitoring



Water Quality Monitoring Schedule

| <u>Test Panel/Analyte</u> | <u># Samples Required</u> | <u>Compliance Period</u> | <u>Frequency</u> | <u>Last Sample Date</u> | <u>Next Sample Due</u> |
|----------------------------|---------------------------|--------------------------|-------------------|-------------------------|------------------------|
| Lead and Copper | 30 | Jan 2015 - Dec 2017 | standard - 3 year | 09/16/2014 | Sep 2017 |
| Asbestos | 1 | Jan 2011 - Dec 2019 | standard - 9 year | 05/12/2009 | May 2018 |
| Total Trihalomethane (THM) | 8 | Jan 2016 - Mar 2016 | quarterly | 03/08/2016 | Jun 2016 |
| Total Trihalomethane (THM) | 8 | Apr 2016 - Jun 2016 | quarterly | 03/08/2016 | Sep 2016 |
| Total Trihalomethane (THM) | 8 | Jul 2016 - Sep 2016 | quarterly | 03/08/2016 | Dec 2016 |
| Total Trihalomethane (THM) | 8 | Oct 2016 - Dec 2016 | quarterly | 03/08/2016 | |
| Halo-Acetic Acids (HAA5) | 8 | Jan 2016 - Mar 2016 | quarterly | 03/08/2016 | Jun 2016 |
| Halo-Acetic Acids (HAA5) | 8 | Apr 2016 - Jun 2016 | quarterly | 03/08/2016 | Sep 2016 |
| Halo-Acetic Acids (HAA5) | 8 | Jul 2016 - Sep 2016 | quarterly | 03/08/2016 | Dec 2016 |
| Halo-Acetic Acids (HAA5) | 8 | Oct 2016 - Dec 2016 | quarterly | 03/08/2016 | |

Notes on Distribution System Chemical Monitoring

For *Lead and Copper*:

- Collect samples from the COLD WATER side of a KITCHEN or BATHROOM faucet that is used daily.
- Before sampling, make sure the water has sat unused in the pipes for at least 6 hours, but no more than 12 hours (e.g. overnight).
- If you are sampling from a faucet that has hot water, make sure cold water is the last water to run through the faucet before it sits overnight.
- If your sampling frequency is annual or every 3 years, collect samples between June 1 and September 30.

For *Asbestos*: Collect the sample from one of your routine coliform sampling sites in an area of your distribution system that has asbestos concrete pipe.

For *Disinfection Byproducts (HAA5 and THM)*: Collect the samples at the locations identified in your Disinfection Byproducts (DBP) monitoring plan.

Source Monitoring

- Collect 'source' chemical monitoring samples from a tap after all treatment (if any), but before entering the distribution system.
- Washington State grants monitoring waivers for various test panels /analytes. Please note that we may require some monitoring as a condition of some waivers. We have granted complete waivers for dioxin, endothal, glyphosate, diquat, and insecticides.

| <u>Source S01</u> | <u>Columbia River</u> | <u>Surface</u> | <u>Use - Permanent</u> | <u>Susceptibility - High</u> |
|---------------------------|---------------------------|--------------------------|------------------------|---|
| <u>Test Panel/Analyte</u> | <u># Samples Required</u> | <u>Compliance Period</u> | <u>Frequency</u> | <u>Last Sample Date</u> <u>Next Sample Due</u> |
| Nitrate | 1 | Jan 2016 - Dec 2016 | standard - 1 year | 04/19/2016 |
| Complete Inorganic (IOC) | 1 | Jan 2011 - Dec 2019 | waiver - 9 year | 05/14/2013 |
| Volatile Organics (VOC) | 1 | Jan 2014 - Dec 2019 | waiver - 6 year | 04/02/2013 |
| | | | | Apr 2019 |



Water Quality Monitoring Schedule

| Source S01 | Columbia River | Surface | Use - Permanent | Susceptibility - High | |
|---------------------------|---------------------------|--------------------------|-------------------|-------------------------|------------------------|
| <u>Test Panel/Analyte</u> | <u># Samples Required</u> | <u>Compliance Period</u> | <u>Frequency</u> | <u>Last Sample Date</u> | <u>Next Sample Due</u> |
| Herbicides | 1 | Jan 2014 - Dec 2022 | waiver - 9 year | 06/11/2013 | Jul 2016 |
| Pesticides | 1 | Jan 2014 - Dec 2022 | waiver - 9 year | 06/11/2013 | Jul 2016 |
| Soil Fumigants | 0 | Jan 2014 - Dec 2016 | waiver - 3 year | 05/04/2004 | |
| Gross Alpha | 1 | Jan 2014 - Dec 2019 | standard - 6 year | 01/21/2014 | |
| Radium 228 | 1 | Jan 2014 - Dec 2019 | standard - 6 year | 06/24/2014 | |
| Source S02 | Wellsian Wy/S12-15 | Well Field | Use - Permanent | Susceptibility - High | |
| <u>Test Panel/Analyte</u> | <u># Samples Required</u> | <u>Compliance Period</u> | <u>Frequency</u> | <u>Last Sample Date</u> | <u>Next Sample Due</u> |
| Nitrate | 1 | Jan 2016 - Dec 2016 | standard - 1 year | 04/20/2016 | |
| Complete Inorganic (IOC) | 1 | Jan 2011 - Dec 2019 | waiver - 9 year | 05/07/2012 | |
| Volatile Organics (VOC) | 1 | Jan 2014 - Dec 2016 | standard - 3 year | 06/11/2013 | Jun 2016 |
| Herbicides | 1 | Jan 2014 - Dec 2022 | waiver - 9 year | 05/06/2015 | |
| Pesticides | 1 | Jan 2014 - Dec 2022 | waiver - 9 year | 05/06/2015 | |
| Soil Fumigants | 1 | Jan 2014 - Dec 2022 | waiver - 9 year | 06/02/2010 | Mar 2017 |
| Gross Alpha | 1 | Jan 2014 - Dec 2016 | standard - 3 year | 05/06/2015 | |
| Gross Alpha | 1 | Jan 2014 - Dec 2019 | standard - 6 year | 05/06/2015 | |
| Radium 228 | 1 | Jan 2014 - Dec 2016 | standard - 3 year | 05/06/2015 | |
| Radium 228 | 1 | Jan 2014 - Dec 2019 | standard - 6 year | 05/06/2015 | |
| Source S05 | Columbia Well - AHA126 | Well | Use - Permanent | Susceptibility - High | |
| <u>Test Panel/Analyte</u> | <u># Samples Required</u> | <u>Compliance Period</u> | <u>Frequency</u> | <u>Last Sample Date</u> | <u>Next Sample Due</u> |
| Nitrate | 1 | Jan 2016 - Dec 2016 | standard - 1 year | 04/26/2016 | |
| Complete Inorganic (IOC) | 1 | Jan 2011 - Dec 2019 | waiver - 9 year | 05/07/2012 | |
| Arsenic | 1 | Jan 2014 - Dec 2016 | standard - 3 year | 06/24/2014 | |
| Volatile Organics (VOC) | 1 | Jan 2014 - Dec 2016 | standard - 3 year | 05/07/2012 | May 2016 |
| Herbicides | 1 | Jan 2014 - Dec 2022 | waiver - 9 year | 05/07/2009 | May 2018 |
| Pesticides | 1 | Jan 2014 - Dec 2022 | waiver - 9 year | 05/07/2009 | May 2018 |



Water Quality Monitoring Schedule

| Source S05 | Columbia Well - AHA126 | Well | Use - Permanent | Susceptibility - High |
|---------------------------|---------------------------|--------------------------|-------------------|-------------------------|
| <u>Test Panel/Analyte</u> | <u># Samples Required</u> | <u>Compliance Period</u> | <u>Frequency</u> | <u>Last Sample Date</u> |
| Soil Fumigants | 1 | Jan 2014 - Dec 2022 | waiver - 9 year | 06/02/2010 |
| Gross Alpha | 1 | Jan 2014 - Dec 2016 | standard - 3 year | 01/21/2014 |
| Radium 228 | 1 | Jan 2014 - Dec 2016 | standard - 3 year | 06/24/2014 |
| | | | | <u>Next Sample Due</u> |
| | | | | Mar 2017 |



Water Quality Monitoring Schedule

Other Information

| Other Reporting Schedules | Due Date |
|--|---|
| Measure chlorine residuals and submit monthly reports if your system uses continuous chlorination: Submit Consumer Confidence Report (CCR) to customers and ODW (Community systems only): Submit CCR certification form to ODW (Community systems only): Submit Water Use Efficiency report online to ODW (Community and other municipal water systems only): Send notices of lead and copper sample results to the customers sampled: Submit Certification of customer notification of lead and copper results to ODW: | monthly 07/01/2016 10/01/2016 07/01/2016 10 days after you receive the laboratory results 60 days after you notify customers |

Special Notes

None

Eastern Regional Water Quality Monitoring Contacts

For questions regarding chemical monitoring:

Stan Hoffman: (509) 329-2132: or Stan.Hoffman@doh.wa.gov

For questions regarding DBPs:

Stan Hoffman: (509) 329-2132 or Stan.Hoffman@doh.wa.gov

For questions regarding coliform bacteria and microbial issues:

Mark Steward: (509) 329-2134 or Mark.Steward@doh.wa.gov

Additional Notes

The information on this monitoring schedule is valid as of the date in the upper left corner on the first page. However, the information may change with subsequent updates in our water quality monitoring database as we receive new data or revise monitoring schedules. There is often a lag time between when you collect your sample and when we credit your system with meeting the monitoring requirement.

We have not designed this monitoring schedule to display all compliance requirements. The purpose of this schedule is to assist water systems with planning for most water quality monitoring, and to allow systems to compare their records with DOH ODW records. Please be aware that this monitoring schedule does not include constituents that require a special monitoring frequency, such as monitoring affiliated with treatment.

Any inaccuracies on this schedule will not relieve the water system owner and operator of the requirement to comply with applicable regulations.

If you have any questions about your monitoring requirements, please contact the regional office staff listed above.

TASK 6 #6

City of Richland
Public Works Department
Water Division

STANDARD MONITORING PLAN

TABLE OF CONTENTS

| | |
|--|--------|
| Water system information / Sources | Page 1 |
| Water system storage / capacities | Page 2 |
| Water distribution | Page 3 |
| Water treatment plant data | page 4 |
| Water system service information / pressure zones | page 5 |
| Standard monitoring plan sites justification | page 6 |
| Standard monitoring sites | page 7 |
| Sampling information and intervals / lab information | page 8 |
| Pressure zone map | page 9 |

City of Richland
Public Works Department
WATER DIVISION

STANDARD MONITORING PLAN

WATER SYSTEM INFORMATION

| | | |
|--|----------|--------------------|
| RICHLAND, CITY OF: WATER SYSTEM | ID#: | 72250W |
| 555 SWIFT BLVD P.O. BOX 190 | COUNTY : | BENTON |
| RICHLAND WA 99352 | GROUP : | A |
| PETE ROGALSKI Director (509)942-7558 (8:00am to 5:00pm) | TYPE : | COMMUNITY |
| JOHN FINCH : Water Manager (509)942-7476 (7:00am to 3:30pm) | WRIA: | 37 |
| After hours: WTP (509)531-4480 | OWNER : | RICHLAND , CITY OF |

WATER SYSTEM SOURCES

| | NAME | CATEGORY | DEPTH | USE | LOCATION |
|-----|----------------------------|------------|-------|-------|------------------|
| S01 | Columbia River 36.0 MGD | Surface | 80' | Perm. | NE/NE 35 10N 28E |
| S02 | Wellsian Way 1.4 MGD | Well field | 80' | Perm. | SE/NE 15 09N 28E |
| S03 | Duke Field 2.4 MGD | Well field | 100' | Emer. | NW/NW 35 10N 28E |
| S04 | No. Richland 15.0 MGD | Well field | 98' | Perm. | NE/NW 26 10N 28E |
| S05 | Columbia Well .86 MGD | Well | 80' | Perm. | NE/NE 35 10N 28E |
| S10 | Willowbrook 1.4 MGD | Well | 1208' | Emer. | SE/SW 36 09N 28E |
| | Total 55.7 | | | | |

City of Richland
Public Works Department
WATER DIVISION

STANDARD MONITORING PLAN

WATER SYSTEM INFORMATION

RICHLAND, CITY OF: WATER SYSTEM ID#: 72250W
555 SWIFT BLVD P.O. BOX 190 COUNTY : BENTON
RICHLAND WA 99352 GROUP : A
PETE ROGALSKI Director TYPE : COMMUNITY
(509)942-7558 (8:00am to 5:00pm)
JOHN FINCH : Water Manager WRIA: 37
(509)942-7476 (7:00am to 3:30pm)
After hours: WTP (509)531-4480 OWNER : RICHLAND , CITY OF

WATER SYSTEM SOURCES

| | NAME | CATEGORY | DEPTH | USE | LOCATION |
|-----|--------------------------|------------|-------|-------|------------------|
| S01 | Columbia River 51 MGD | Surface | 80' | Perm. | NE/NE 35 10N 28E |
| S02 | Wellsian Way 1.4 MGD | Well field | 80' | Perm. | SE/NE 15 09N 28E |
| S05 | Columbia Well .86 MGD | Well | 80' | Perm. | NE/NE 35 10N 28E |

Total 53.3

City of Richland
Public Works Department
WATER DIVISION

STANDARD MONITORING PLAN

WATER SYSTEM STORAGE

| <u>Reservoir name</u> | <u>Capacity</u> | <u>Zone</u> | <u>Zone Sub/Totals</u> |
|-----------------------|-----------------|-------------|------------------------|
| WTP-Clearwell | 2.2 MG | Core | |
| 1182 Reservoir | 2.0 MG | Core | |
| 5-million Reservoir | 5.0 MG | Core | |
| 10-million Reservoir | 10.0 MG | Core | <u>Total: 19.2 MG</u> |
| TAP1 (A) Reservoir | .75 MG | Tapteal- I | |
| TAP 1 (B) Reservoir | 2.60 MG | Tapteal- I | <u>Total: 3.35 MG</u> |
| TAP2 (A) Reservoir | .18 MG | Tapteal- 2 | |
| TAP2 (B) Reservoir | .70 MG | Tapteal- 2 | |
| Country Ridge (A) | .24 MG | Tapteal -2 | |
| Country Ridge (B) | .14 MG | Tapteal -2 | <u>Total: 1.26 MG</u> |
| Meadow Hills XX | .23 MG | Tapteal -5 | <u>Total: .23 MG</u> |
| West Cliff (A) XX | .21 MG | Tapteal -3 | |
| West Cliff (B) XX | .21 MG | Tapteal -3 | <u>Total : .42 MG</u> |

TOTAL CAPACITY: 24.46 MG

City of Richland
Public Works Department
Water Division

STANDARD MONITORING PLAN

WATER DISTRIBUTION STATIONS

| <u>Pump Stations</u> | <u>horse power</u> | <u>Pump GPM</u> | <u>Description</u> |
|----------------------|--------------------|-----------------|---|
| <u>Horn Rapids:</u> | | | |
| Pump #1 | 20hp | 340 gpm | Horn Rapids pump station is located north/west of Richland Tap I pressure zone. Core north side of hwy 240. Horn Rapids pump station Boosts pressure in Richland core and provides fire protection. |
| Pump #2 | 20 hp | 340 gpm | |
| Fire #3 | 75 hp | 1500 gpm | |
| Fire#4 | 75 hp | 1500 gpm | |
| <u>Tapteal I</u> | | | |
| Pump #1 | 100 hp | 1500 gpm | Tap I pump station is located west of The Yakima river North of I-82 Tap I Pumps from Richland core to Tap I Pressure zone. |
| Pump #2 | 50 hp | 810 gpm | |
| Pump #3 | 100 hp | 1500 gpm | |
| <u>Keene Road</u> | | | |
| Pump #1 | 40 hp | 525 gpm | Keene road pump station is located East of Country Ridge Estates Entrance. Tapteal 2 pump station is located off of High meadow street. These stations pump from Tap I pressure zone to Tap2 Pressure zone. |
| Pump #2 | 40 hp | 525 gpm | |
| <u>Tapteal II</u> | | | |
| Pump #1 | 60 hp | 750 gpm | |
| Pump #2 | 60 hp | 750 gpm | |
| <u>Meadow Hills</u> | | | |
| Pump #1 | 50 hp | 332 gpm | Meadow Hills pump station is located at Tapteal 2 reservoir site. This station from Tapteal 2 pressure zone into Tapteal 5 pressure zone. |
| Pump #2 | 50 hp | 332 gpm | |
| <u>West cliff</u> | | | |
| Pump #1 | 50 hp | 900 gpm | West Cliff pump station is located at the corner of west cliff Blvd and Meadow Hills Dr. This pump station pumps from tap2 pressure zone to pressure zone 3. |
| Pump #2 | 50 hp | 900 gpm | |

CITY OF RICHLAND
Public Works Department
WATER DIVISON

STANDARD MONITORING PLAN

TREATMENT PLANTS

| | | |
|--|-----------------------|--|
| Name: | Water Treatment Plant | North Richland Slow Sand Filtration Facility |
| Location: | 110 Saint Street | 2805 George Wash Way |
| Source: | Columbia River (SO1) | Columbia River (SO1) |
| Surface Water Treatment: | yes | yes |
| Chlorine Gaseous Disinfection: | yes | yes |
| Ultra Violet Light Disinfection: | no | yes |
| Slow Sand Filtration: | no | yes |
| Multimedia Filters: | yes | no |
| Capacity MGD: | 36 | 15 |
| Rapid Mix Coagulation, Flocculation, Sedimentation: | yes | no |
| Capability Of Adding Lime for pH Control: | yes | no |
| Capability Of Adding Powdered carbon For organic& color removal. Taste and Odor control: | yes | no |

Contact:
John Finch (509)942-7476
Water Manager

City Of Richland
Public Works Department
WATER DIVISION

STANDARD MONITORING PLAN

WATER SYSTEM SERVICE INFORMATION

| | |
|--------------------------------|--------|
| Total Population Served: | 44,700 |
| Total Commercial Connections: | 1,861 |
| Total Residential Connections: | 14,571 |
| Total Service Connections | 16,432 |

PRESSURE ZONES

| Pressure Zone | Elevation Feet | Population | Services | % of Total Population | # of routine samples/month | # of routine samples/week |
|---------------|----------------|------------|----------|-----------------------|----------------------------|---------------------------|
| Richland Core | 340-425 | 27000 | 8438 | 60 | 30 | 7 |
| Tapteal I | 425-555 | 12000 | 3750 | 27 | 12 | 4 |
| Tapteal 2 | 555-695 | 4000 | 1250 | 9 | 5 | 2 |
| Tapteal 3 | 660-800 | 1200 | 375 | 3 | 2 | 1 |
| Tapteal 4 | 800-945 | n/a | n/a | n/a | n/a | n/a |
| Tapteal 5 | 945-1095 | 500 | 156 | 1 | 1 | 1 |
| Tapteal 6 | 1090-1240 | n/a | n/a | n/a | n/a | n/a |
| Tapteal 7 | 1240-1390 | n/a | n/a | n/a | n/a | n/a |
| Tapteal 8 | 1390-1480 | n/a | n/a | n/a | n/a | n/a |

Attachment to form 6 section B

B. Summary of data

We looked at several areas to help us determine where to sample for TTHM's, HAA5's and average residence time.

- (1) Customer billing: Looked at areas that have low consumption where there will be an increase in detention times. (longer contact between chlorine and organics)
- (2) Reservoirs and pump stations: Looked at reservoir levels, pump run times and gpm to determine how long it took to turn over the volume in that reservoir.
- (3) Pipe layout,mains,service lines etc: Looked at maps to determine dead ends, pipe bends,Prvs etc that would restrict flow.
- (4) Stage 1 DBP data: Looked at our data gathered from stage 1 sampling sites determined the areas where higher TTHM's and HAA5's exist and used that data to help determine areas of potential high formations. Based on all the information we have gathered HAA5's form half way in the distribution lines where these high concentrations of TTHM's exist.
- (5) Disinfectant residual: Looked at averages of CL2 residuals thru out the system to determine the areas of consistently high CL2 residuals.
- (6) Chlorine Booster pumps stations: We considered areas where add itional chlorine was added in the distribution system.

We looked at all available information we had on the distribution system. We choose our additional standard monitoring sites based on this information. We choose sites on dead end mains where TTHM's should be concentrated. We choose sites on mains with low turn over rates. We looked at historical data to find the month of august as the month that had the highest water temperature the highest TTHM's and the highest HAA5's therefore we determined that if we began our standard monitoring testing cycle in February 2008 then in august 2008 we would be collecting both stage 1 and standard monitoring samples.

City Of Richland
Public Works Department
WATER DIVISION

STANDARD MONITORING PLAN

SAMPLING SITES

| SAMPLE SITES | SITE ID # | PRESSURE ZONE | HIGH TTHM'S | HIGH HAA5'S | AVE/RES/TIME | E/P |
|--------------------------------|-----------|---------------|-------------|-------------|--------------|-----|
| 110 Saint st. 100B well vault. | RC-25 | RICHLAND CORE | | | | X |
| 1900 Jadwin ave . | RC-10 | RICHLAND CORE | | | X | |
| 1939 Fowler st.* | RC-24 | RICHLAND CORE | X | | | |
| 2500 Van Giesen st. | RC-22 | RICHLAND CORE | | | X | |
| 2645 Horn Rapids rd. | RC-9 | RICHLAND CORE | | X | | |
| 2711 Stone Creek st. | RC-23 | RICHLAND CORE | X | | | |
| 275 Piper st. | T1-11 | TAPTEAL 2 | | X | | |
| 2984 Lorayne rd* | T2-8 | TAPTEAL 2 | X | | | |

- These are presently fire hydrants that we are sampling from there will be sample stations installed at a later date.

City Of Richland
Public Works Department

STANDARD MONITORING PLAN

SAMPLING INFORMATION AND INTERVALS

TTHM'S AND HAA5's

| | |
|---------------------------------|------------------------------------|
| Standard monitoring sites | Eight |
| Samples Per Site | Four |
| Sampling Frequency | Every Sixty Days |
| Start Month/Year | February 2008 |
| Duration Of Standard Monitoring | One Year |
| When In The Month | Second Week |
| Historically High Month | August |
| Who Does The Sampling | Qualified Water Division Personnel |

Samples from all eight sample stations must be collected in the same day between 7:00am and 3:30pm.

Samples must be delivered to the lab by 4:00pm the same day.

SAMPLE TEST RESULTS/ COMPLIANCE

Standard monitoring samples will be collected every sixty days we will be using a running average of all standard monitoring sites for both high TTHM's and HAA5's. Results of all 8 sites will be added together and then divided by 8. At the end of the year the averages of the sixty days will be added together and divided by 6.

ANALSIS DONE BY:

**Anatek Labs,Inc.
1282 Alturas Drive
Moscow,ID 83843
LabID: ID00013**

RESERVOIR, WELL & PUMP FACILITIES LOCATIONS

CITY OF RICHLAND

LEGEND

- ◻ SANITARY WATER PUMP STATION
- ◻ WATER RESERVOIR
- ◇ WELLS
- WATER TAP 20
- WATER TAP 30
- EVAPORATION PUMP STATION
- CITY LIMITS
- USA



WELLS

- NORTH RICHLAND WELLFIELD:**
- EAST:
 - ◇ 2000-G 200 GPD
 - ◇ 2000-H 200 GPD
 - ◇ 2000-E 200 GPD
 - WEST:
 - ◇ 2000-A 200 GPD
 - ◇ 2000-B 200 GPD
 - ◇ 2000-D 200 GPD
 - ◇ 2000-J 200 GPD
 - ◇ 2000-L 200 GPD
 - ◇ CREEK WELLS (A & B) 200 GPD
 - ◇ COLUMBIA WELLFIELD PUMP-B 200 GPD
 - ◇ WILSON WAY WELLFIELD 20-A 200 GPD
 - ◇ WILSON WAY WELLFIELD 20 200 GPD
 - ◇ WILSON WAY WELLFIELD 20 200 GPD
 - ◇ WILSONWAY WELLFIELD 20 200 GPD
 - ◇ HARRISON WELLS 200 GPD

WATER RESERVOIRS

| RESERVOIR NAME | CAPACITY | STATUS |
|------------------------|----------|--------|
| WTP CLEARWELL 20 | 2000 | 2000 |
| 200 RESERVOIR NORTH | 2000 | 2000 |
| 200 RESERVOIR SOUTH | 2000 | 2000 |
| 200 MILLION GALLON | 2000 | 2000 |
| 200 TAPITAL 1" W | 2000 | 2000 |
| 200 TAPITAL 1" W | 2000 | 2000 |
| 200 COUNTRY RIDGE 1" W | 2000 | 2000 |
| 200 COUNTRY RIDGE 1" W | 2000 | 2000 |
| 200 TAPITAL 1" W | 2000 | 2000 |
| 200 TAPITAL 1" W | 2000 | 2000 |
| 200 WESTLOVE 1" W | 2000 | 2000 |
| 200 WESTLOVE 1" W | 2000 | 2000 |
| 200 MEADOW HILLS | 2000 | 2000 |

SANITARY WATER PUMP STATIONS

- ◻ COLUMBIA 200 GPD
- ◻ HARRISON 200 GPD
- ◻ WTP STATION 200 GPD
- ◻ WTP NORTH 200 GPD
- ◻ WTP SOUTH 200 GPD
- ◻ WTP WEST 200 GPD
- ◻ WTP EAST 200 GPD
- ◻ WTP CENTER 200 GPD
- ◻ WTP NORTH 200 GPD
- ◻ WTP SOUTH 200 GPD
- ◻ WTP WEST 200 GPD
- ◻ WTP EAST 200 GPD
- ◻ WTP CENTER 200 GPD
- ◻ WTP NORTH 200 GPD
- ◻ WTP SOUTH 200 GPD
- ◻ WTP WEST 200 GPD
- ◻ WTP EAST 200 GPD
- ◻ WTP CENTER 200 GPD

EVAPORATION PUMP STATION

- ◻ COLUMBIA POINT
- ◻ COLUMBIA POINT BARRICA
- ◻ PLYMOUTH BARRICA
- ◻ NORTH BARRICA

WATER SAMPLE STATIONS

- 100 MEADOW HILLS DR
- 204 BIRCHWOOD
- 1001 GREEN & 97-PAGE
- 470 STONEMAN
- 200 FURN
- 200 GEORGE WALKER WAY
- 200 JONES AVE
- 200 PERRY ROYAL AVE
- 400 KENNEDY ST
- 200 OIL PUMP TR.
- 200 CLARKSON LN
- 400 KENNEDY RD
- 200 NORTH PAPER RD
- 200 BRADLEY BLVD
- 200 MEADOW HILLS DR
- 200 BENT ST
- 200 57 ST
- 400 BRADSHAW ST
- 200 WILSON BLVD
- 200 CRAWFORD AVE
- 200 N. COLUMBIA CTR. BLVD.
- COLUMBIA POC. BARRICA

NEW WATER LEAD SUBJECT

- 200 BENT ST.
- 200 TAYLOR DR.
- 200 NORTH PAPER RD.
- 200 BRADLEY BLVD.
- 200 GEORGE WALKER WAY
- 200 BRADSHAW WAY
- 400 CRAWFORD AVE.
- 204 WILSON ST.
- 200 WATERFRONT DR.
- 70 LEE BLVD.

NEW SANITARY LEAD SUBJECT

- 200 BENT ST.
- 200 NORTH PAPER RD.
- 200 WATERFRONT DR.
- 200 BENT ST.
- 40 APOLLO BLVD.
- 200 WATERS ST.
- 200 ROBERTSON DR.
- 200 BRADLEY BLVD.
- 200 GEORGE WALKER WAY
- 200 BRADLEY AVE.

WATER LINES

- 12" WATER LEAD
- 10" WATER LEAD
- 8" WATER LEAD
- 6" WATER LEAD
- 4" WATER LEAD
- 3" WATER LEAD
- 2" WATER LEAD
- 1" WATER LEAD

- TAP I
- TAP II
- TAP III
- TAP IV
- TAP V
- TAP VI
- TAP VII
- TAP VIII

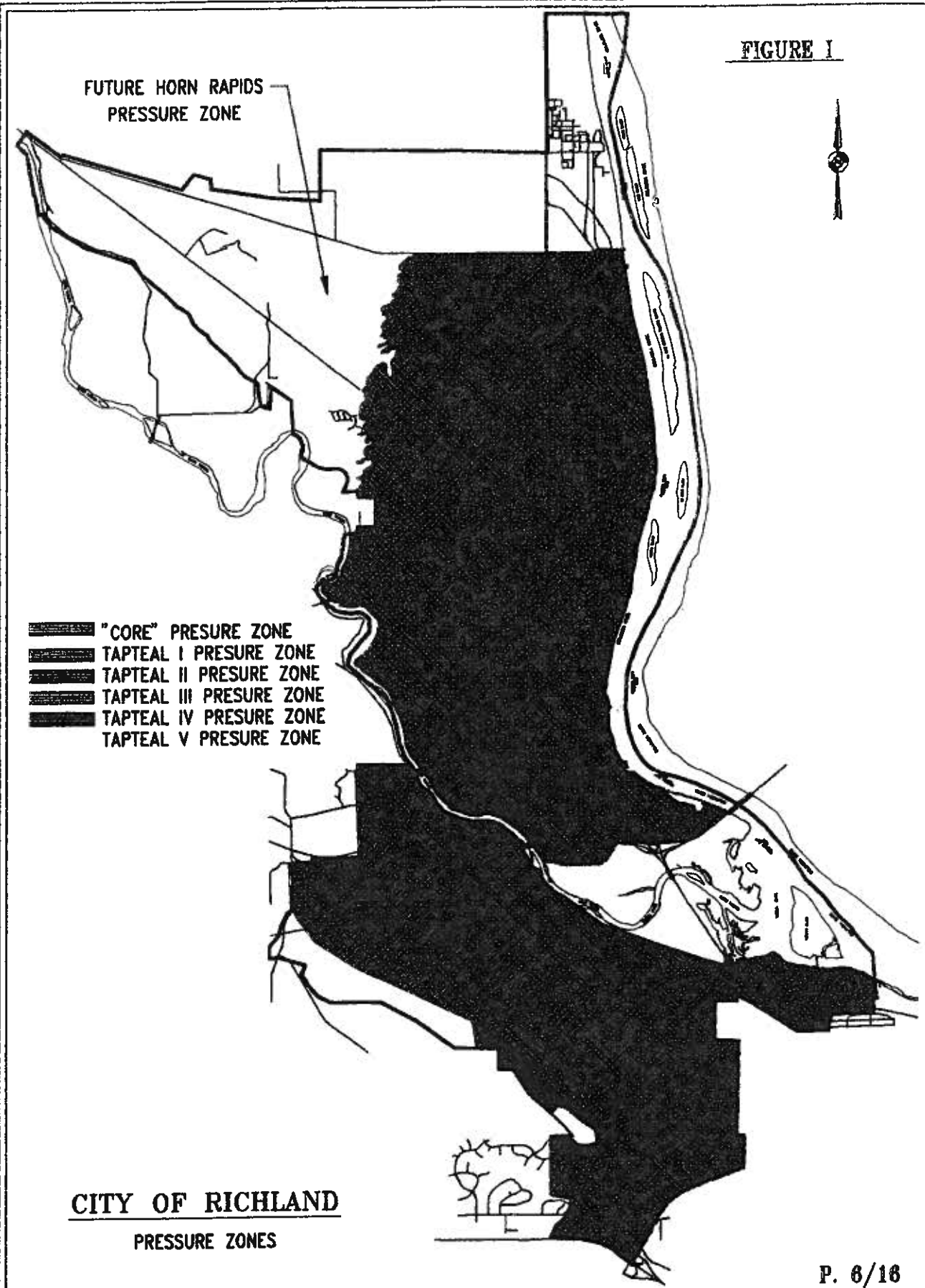


FIGURE I

FUTURE HORN RAPIDS
PRESSURE ZONE

- █ "CORE" PRESURE ZONE
- █ TAPTEAL I PRESURE ZONE
- █ TAPTEAL II PRESURE ZONE
- █ TAPTEAL III PRESURE ZONE
- █ TAPTEAL IV PRESURE ZONE
- █ TAPTEAL V PRESURE ZONE

CITY OF RICHLAND
PRESSURE ZONES



Service Zone Elevations: 340-425 feet

425-555 feet

555-660 feet

945-1090 feet

Richland Core Pressure Zone

Tapteal 1 Pressure Zone

Tapteal 11 Pressure Zone

Tapteal 11 Pressure Zone

Future Reservoir In Horn Rapids

Future reservoir In Horn Rapids

Overflow Elevation 600

Overflow elevation 545

Horn Rapids Pump Station

Tapteal 1 Elevated 654 ft Reservoirs (0.75&2.6 MG)

5 & 10 MG Elevated 545 ft reservoirs

Tapteal 11 Elevated 795 ft Reservoirs (0.18&0.7 MG)

Meadow Hills Elevated Reservoir (0.23 MG) Elevation 1090 ft

Meadow Hills Pump Station

Tapteal 11 Pressure Zone 660-800 feet

Westcliffe elevated 800 ft reservoirs (2x.21 MG)

Westcliffe Pump station

Tapteal 11 Pump Station

Country Ridge Elevated 660 ft Reservoirs (0.24&0.14)

Keen RD. Pump Station

WTP (30 MG/DAY)

Wtp clearwell (2.2mg)

WTP high service pumps

River Intake Structure

UV Facility

N. Richland well Field (8 wells)

Duke Field (2 wells)

Columbia Well (1100-B)

Wellsian Way Field (2 wells)

1182 air stripper

1182 clearwell (2 MG)

1182 pump station

Willowbrook well

City Of Richland
Schematic Of Water production
Facilities & Pressure Zones
Revised 09/05/07
J Tallent Doc water system one line

Form 6: Standard Monitoring Plan

I. GENERAL INFORMATION

A. PWS Information*

B. Date Submitted*

PWSID: 72250W

PWS Name: CITY OF RICHLAND

PWS Address: P.O.BOX 190 MS-15

City: RICHLAND

State: WA

ZIP: 99352

Population Served: 44,700

| | | |
|--------------|--------------------|---------------------------------|
| System Type: | Source Water Type: | Buying / Selling Relationships: |
| CWS | Subpart H | Wholesale System |

C. PWS Operations

Residual Disinfectant Type: Chlorine

Number of Disinfectant Sources: 1 - Surface, 1 - GWUD, 1 - Ground

D. Contact Person*

Name: Kim Duncan

Title: Water Quality Specialist

Phone #: (509)942-7474

Fax #: (509)942-5660

E-mail: kduncan@ci.richland.wa.us

II. IDSE REQUIREMENTS*

A. Number of Sites

B. Schedule

C. Standard Monitoring Frequency

| | | | |
|---------------------|----------|-------------------|---|
| Total: | <u>8</u> | Schedule 3 | Every 60 days (6 monitoring periods) |
| Near Entry Point | <u>1</u> | | |
| Avg Residence Time: | <u>2</u> | | |
| High TTHM: | <u>3</u> | | |
| High HAA5: | <u>2</u> | | |

Form 6: Standard Monitoring Plan

III. SELECTING STANDARD MONITORING SITES

A. Data Evaluated Put a " X " in each box corresponding to the data that you used to select each type of standard monitoring site. Check all that apply.

| Data Type | Type of Site | | | |
|--|---------------|---------------------|-----------|-----------|
| | Near Entry Pt | Avg. Residence Time | High TTHM | High HAA5 |
| System Configuration | | | | |
| Pipe layout, locations of storage facilities | X | X | X | X |
| Locations of sources and consecutive system entry points | X | X | X | X |
| Pressure zones | X | X | X | X |
| Information on population density | X | X | X | X |
| Locations of large customers | X | X | X | X |
| Water Quality and Operational Data | | | | |
| Disinfectant residual data | X | X | X | X |
| Stage 1 DBP | X | X | X | X |
| Other DBP data | | | | |
| Microbiological monitoring data (e.g., HPC) | | | | |
| Tank level data, pump run times | X | X | X | X |
| Customer billing records | X | X | X | X |
| Advanced Tools | | | | |
| Water distribution system model | | | | |
| Tracer study | | | | |

B. Summary of Data* Provide a summary of data you relied on to justify standard monitoring site selection. (attach additional sheets if needed)

Please See Attachment

B. Summary of data

We looked at several areas to help us determine where to sample for TTHM's, HAA5's and average residence time.

- (1) Customer billing: Considered areas that have low consumption where there will be an increase in detention times (longer contact between chlorine and organics).
- (2) Reservoirs and Pump Stations: Looked at reservoir levels, pump run times, and GPM to determine how long it took to turn over the volume in that reservoir.
- (3) Pipe layout, mains, service lines etc.: Looked at maps to determine dead ends, pipe bends, PRV's, etc. that would restrict flow.
- (4) Stage 1 DBP data: Reviewed out data gathered from Stage 1 sampling sites. Determined the areas where higher TTHM's and HAA5's exist and used that data to help determine areas of potential high formations. Collected preliminary standard monitoring samples. Results confirmed our selection of these sites.
- (5) Disinfectant residual: We researched averages of CL2 residuals throughout the system to determine the areas of consistently high and low Cl2 residuals.
- (6) Chlorine Booster Pump Stations: We considered areas where additional chlorine was added in the distribution system.

We looked at all available information on our distribution system. Choosing our additional standard monitoring sites based on this information. We choose sites on mains with low turn over rates. We looked at historical data and found August as the month with the highest water temperature, highest TTHM's and highest HAA5's. Therefore, we determined that if we began our standard monitoring testing cycle in February 2008 then in August 2008 we would be collection both Stage 1 and standard monitoring samples.

IV. JUSTIFICATION OF STANDARD MONITORING SITES*

| Standard Monitoring Site ID (from map)❶ | Site Type | Justification |
|---|------------------|---|
| RC-10 | Avg. Res. Time | This sample site is between water treatment plant and 5 & 10 mg reservoirs we pulled Cl2 samples at wtp , distribution system and the 5 &10 mg reservoirs. We used these numbers to determine the area of average Cl2 residual. |
| RC-24 | High HAA5 | This sample site is close to a dead end main. The flow rates are low. We looked at average Cl2 residuals in this area and this site is low on average. |
| RC-22 | Avg.Res.Time | This sample site is between water treatment plant and 5 & 10 mg reservoirs we pulled Cl2 samples at wtp , distribution system and the 5 &10 mg reservoirs. We used these numbers to determine the area of average Cl2 residual. |
| RC-9 | High TTHM'S | This sample site is on a large main that feeds industrial use. The flow in this main varies but on average is low. This main tee's close to sample site. This sample site has a average Cl2 residual of approx 0.1 mg/l. |
| RC-23 | High TTHM'S | This sample site is in an Area of low consumption. It has a separate irrigation source. This water comes from a 2 mg clearwell at the water treatment plant. Chlorine ave residual is between .9 and 1.2 mg/l. |
| RC-25 | Near Entry Point | This is located on the effluent of the water treatment plant. |
| T1-11 | High HAA5 | Area of low consumption. Area has its own irrigation source in newer subdivision. On average this site also has a low Cl2 residual. Through billing , through Cl2 residuals in the area we believe the age of water in this main is above the system average. |
| T2-8 | High TTHM | This site is near the bottom of a reservoir that has a low turn over rate. Supply to this reservoir has chlorine add by a chlorine booster pump. This is near a intertie valve that is normally closed this is a dead end main unless the intertie is open. |

❶ Verify that site IDs match IDs in Section IV and on your distribution system schematic (See Section VII of this form). Attach additional copies if you are required to select more than 8 standard monitoring locations or need more room.

Form 6: Standard Monitoring Plan

V. PEAK HISTORICAL MONTH AND PROPOSED STANDARD MONITORING SCHEDULE

- A. Peak Historical Month* August
- B. If Multiple Sources, Source Used to Determine Peak Historical Month
(write "N/A" if only one source in your system)
Columbia River
- C. Peak Historical Month Based On* (check all that apply)
 High TTHM Warmest water temperature
 High HAA5

If you used other information to select your peak historical month, explain here (*attach additional sheets if needed*)

D. Proposed Standard Monitoring Schedule*

| Standard Monitoring Site ID (from map)❶ | Projected Sampling Date (date of week)❷ | | | | | |
|--|---|----------|----------|-----------|----------|----------|
| | Period 1 | Period 2 | Period 3 | Period 4* | Period 5 | Period 6 |
| RC-9 | 2/13/08 | 4/9/08 | 6/11/08 | 8/13/08 | 10/8/08 | 12/10/08 |
| RC-10 | 2/13/08 | 4/9/08 | 6/11/08 | 8/13/08 | 10/8/08 | 12/10/08 |
| RC-22 | 2/13/08 | 4/9/08 | 6/11/08 | 8/13/08 | 10/8/08 | 12/10/08 |
| RC-23 | 2/13/08 | 4/9/08 | 6/11/08 | 8/13/08 | 10/8/08 | 12/10/08 |
| RC-24 | 2/13/08 | 4/9/08 | 6/11/08 | 8/13/08 | 10/8/08 | 12/10/08 |
| RC-25 | 2/13/08 | 4/9/08 | 6/11/08 | 8/13/08 | 10/8/08 | 12/10/08 |
| T2-8 | 2/13/08 | 4/9/08 | 6/11/08 | 8/13/08 | 10/8/08 | 12/10/08 |
| T1-11 | 2/13/08 | 4/9/08 | 6/11/08 | 8/13/08 | 10/8/08 | 12/10/08 |

* Denotes peak historical month

❶ Verify that site IDs match IDs in Section IV and on your distribution system schematic (See Section VII of this form). Attach additional copies if you are required to select more than 8 standard monitoring locations.

❷ period = monitoring period. Complete for the number of periods from Section II.C. Can list exact date or week (e.g., week of 7/9/07)

Form 6: Standard Monitoring Plan

VI. PLANNED STAGE 1 DBPR COMPLIANCE MONITORING SCHEDULE*

| Stage 1 DBPR Monitoring Site ID (from map) ❶ | Projected Sampling Date (date or week) ❷ | | | |
|--|--|----------|------------|----------|
| | Period 1 | Period 2 | * Period 3 | Period 4 |
| RC-3 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |
| RC-4 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |
| RC-13 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |
| RC-15 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |
| RC-19 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |
| RC-20 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |
| T1-4 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |
| T1-5 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |

* Denotes peak historical month

❶ Verify that site IDs match IDs in Section IV and on your distribution system schematic (See Section VII of this form). Attach additional copies if you are required to monitor more than 8 stage 1 DBPR sites.

❷ period = monitoring period. Complete for the number of periods in which you must conduct Stage 1 DBPR monitoring during IDSE monitoring. Can list exact date of week (e.g., week of 7/9/07)

• Additional planned stage 1 monitoring schedule attached.

VII. DISTRIBUTION SYSTEM SCHEMATIC*

ATTACH a schematic of your distribution system.

Distribution System schematics are not confidential and should not contain information that poses a **security risk** to your system. EPA recommends that you use one of two options:

Option 1: Distribution system schematic with no landmarks or addresses indicated.

Show locations of sources, entry points, storage facilities, standard monitoring locations, and Stage 1 compliance monitoring locations (required). Also include pressure zone boundaries and locations of pump stations. Provide map scale.

Option 2: City map without locations of pipes indicated. Show locations of sources, entry points, storage facilities, standard monitoring locations, and Stage 1 compliance monitoring locations (required). Also include pressure zone boundaries and locations of pump stations.

Provide map scale.

Additional Planned Stage 1 DBPR Compliance Monitoring Schedule

| Stage 1 DBPR Monitoring Site ID (from map)① | Projected Sampling Date (date or week)② | | | |
|---|---|----------|------------|----------|
| | Period 1 | Period 2 | * Period 3 | Period 4 |
| T1-7 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |
| T2-3 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |
| T2-4 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |
| T5-2 | 02/13/08 | 05/14/08 | 08/13/08 | 11/12/08 |

* Denotes peak historic month

VIII. ATTACHMENTS

- Distribution System Schematic* (Section VII)
- Additional Sheets for the summary of data or site justifications (Sections III and IV).
- Additional copies of Page 3 for justification of Standard Monitoring Sites (Section IV). **Required if you are a subpart H system service more than 49,999 people or a ground water system service more than 499,999 people.**
- Additional sheets for explaining how you used data other than TTHM, HAA5, and temperature data to select your peak historical month (Section V)
- Additional copies of Page 4 for proposed Monitoring schedule (Section V). **Required if you are a subpart H system service more than 49,999 people or a ground water system service more than 499,999 people.**
- Additional Sheets for planned Stage 1 DBPR compliance monitoring schedule (Section VI).

Total Number of Pages in Your plan - 12

2008

Notes:

Standard Monitoring

Stage 1

JANUARY

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | 1 | 2 | 3 | 4 | 5 | |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | 31 | | |

FEBRUARY

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | | | | 1 | 2 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | |

MARCH

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | | | | | 1 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

APRIL

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | 1 | 2 | 3 | 4 | 5 | |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | | | |

MAY

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |

JUNE

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | | | | |

JULY

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | 1 | 2 | 3 | 4 | 5 | |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | 31 | | |

AUGUST

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | | | | 1 | 2 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | | | | | | |

SEPTEMBER

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | | | | |

OCTOBER

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | 1 | 2 | 3 | 4 | |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 29 | 30 | 31 | |

NOVEMBER

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | | | | | | 1 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | | | | | | |

DECEMBER

| | | | | | | |
|----|----|----|----|----|----|----|
| S | M | T | W | T | F | S |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 | | | |

WATER DIVISION

COLIFORM MONITORING PLAN

TABLE OF CONTENTS

| | |
|---|----------|
| Water System & Water Sources Information | Page 1. |
| Water System Storage / Reservors | Page 2. |
| Water System Distribution Stations | Page 3. |
| Water System / Surface Water Treatment / Well Field | Page 4. |
| Water System Service Information & Pressure Zones | Page 5. |
| Water System Sampling Protocol | Page 6. |
| Sample Sites / Richland Core | Page 7. |
| Sample Sites/ Richland Core | Page 8 |
| Sample Sites / Richland Core | Page 9. |
| Sample Sites/ Tapteal- 1 | Page 10. |
| Sample Sites/ Tapteal- 2 | Page 11. |
| Sample Sites/ Tapteal- 3 | Page 12. |
| Sample Sites/ Tapteal - 5 | Page 13 |
| Schematic Of Water system | Page 14. |
| Misc Bacteriological Sample/ Preparation Plan Revision & Plan Review. | Page 15. |

City Of Richland
Public Works Department
WATER DIVISION

COLIFORM MONITORING PLAN

WATER SYSTEM INFORMATION

RICHLAND, CITY OF: WATER SYSTEM ID#: 72250W
555 SWIFT BLVD P.O. BOX 190 COUNTY : BENTON
RICHLAND WA 99352 GROUP : A
PETE ROGALSKI Director TYPE : COMMUNITY
(509)942-7558 (8:00am to 5:00pm)
JOHN FINCH : Water Manager WRIA: 37
(509)942-7476 (7:00am to 3:30pm)
After hours: WTP (509)531-4480 OWNER : RICHLAND , CITY OF

WATER SYSTEM SOURCES

| | NAME | CATEGORY | DEPTH | USE | LOCATION |
|-----|--------------------------|-----------------|--------------|------------|------------------|
| S01 | Columbia River 51 MGD | Surface | 80' | Perm. | NE/NE 35 10N 28E |
| S02 | Wellsian Way 1.4 MGD | Well field | 80' | Perm. | SE/NE 15 09N 28E |
| S05 | Columbia Well .86 MGD | Well | 80' | Perm. | NE/NE 35 10N 28E |
| | Total 53.3 | | | | |

City of Richland
Public Works Department
WATER DIVISION

COLIFORM MONITORING PLAN

WATER SYSTEM STORAGE

Total Water Storage Capacity:
as follows

24.46 million gallons summarized

| <u>Reservoir name</u> | <u>Capacity</u> | <u>Zone</u> | <u>Zone Sub/Totals</u> |
|-----------------------|-----------------|-------------|------------------------|
| WTP-Clearwell | 2.2 MG | Core | |
| 1182 Reservoir | 2.0 MG | Core | |
| 5-million Reservoir | 5.0 MG | Core | |
| 10-million Reservoir | 10.0 MG | Core | <u>Total: 19.2 MG</u> |
| TAP1 (A) Reservoir | .75 MG | Tapteal 1 | |
| TAP 1 (B) Reservoir | 2.60 MG | Tapteal 1 | <u>Total: 3.35 MG</u> |
| TAP2 (A) Reservoir | .18 MG | Tapteal 2 | |
| TAP2 (B) Reservoir | .70 MG | Tapteal 2 | |
| Country Ridge (A) | .24 MG | Tapteal 2 | |
| Country Ridge (B) | .14 MG | Tapteal 2 | <u>Total: 1.26 MG</u> |
| Meadow Hills | .23 MG | Tapteal 5 | <u>Total: .23 MG</u> |
| West Cliff (A) | .21 MG | Tapteal 3 | |
| West Cliff (B) | .21 MG | Tapteal 3 | <u>Total : .42 MG</u> |

TOTAL CAPACITY: 24.46 MG

City of Richland
Public Works Department
Water Division

COLIFORM MONITORING PLAN

WATER DISTRIBUTION STATIONS

| <u>Pump Stations</u> | <u>horse power</u> | <u>Pump GPM</u> | <u>Description</u> |
|----------------------|--------------------|-----------------|--|
| <u>Horn Rapids:</u> | | | |
| Pump #1 | 20hp | 340 gpm | Horn Rapids pump station is located north/west of Richland Tap I pressure zone. Core north side of hwy 240. Horn Rapids pump station Boosts pressure in Richland core and provides fire protection. |
| Pump #2 | 20 hp | 340 gpm | |
| Fire #3 | 75 hp | 1500 gpm | |
| Fire#4 | 75 hp | 1500 gpm | |
| <u>Tapteal I</u> | | | |
| Pump #1 | 100 hp | 1500 gpm | Tap I pump station is located west of The Yakima river North of I-82 Tap I Pumps from Richland core to Tap I Pressure zone. |
| Pump #2 | 50 hp | 810 gpm | |
| Pump #3 | 100 hp | 1500 gpm | |
| <u>Keene Road</u> | | | |
| Pump #1 | 40 hp | 525 gpm | Keene road pump station is located East of Country Ridge Estates Entrance. Tapteal 2 pump station is located off of High meadow street. These stations pump from Tap I pressure zone to Tap 2 Pressure zone. |
| Pump #2 | 40 hp | 525 gpm | |
| <u>Tapteal 2</u> | | | |
| Pump #1 | 60 hp | 750 gpm | |
| Pump #2 | 60 hp | 750 gpm | |
| <u>Meadow Hills</u> | | | |
| Pump #1 | 50 hp | 332 gpm | Meadow Hills pump station is located at Tapteal 2 reservoir site. This station from Tapteal 2 pressure zone into pressure zone 5 |
| Pump #2 | 50 hp | 332 gpm | |
| <u>West cliff</u> | | | |
| Pump #1 | 50 hp | 900 gpm | West Cliff pump station is located at the corner of west cliff Blvd and Meadow Hills Dr. This pump station pumps from tap 2 pressure zone to pressure zone 3 |
| Pump #2 | 50 hp | 900 gpm | |

CITY OF RICHLAND
Public Works Department
WATER DIVISION

COLIFORM MONITORING PLAN

| | | |
|--|-----------------------|---|
| Name: | Water Treatment Plant | North Richland Slow Sand Filtration Facility. |
| Location: | 110 Saint Street | 2805 George Wash Way |
| Source: | Columbia River (SO1) | Columbia River (SO1) |
| Surface Water Treatment: | yes | yes |
| Chlorine Gaseous Disinfection: | yes | yes |
| Ultra Violet Light Disinfection: | no | yes |
| Slow Sand Filtration: | no | yes |
| Multimedia Filters: | yes | no |
| Capacity MGD: | 36 | 15 |
| Rapid Mix Coagulation, Flocculation, Sedimentation: | yes | no |
| Capability Of Adding Lime for pH Control: | yes | no |
| Capability Of Adding Powdered carbon For organic& color removal. Taste and Odor control: | yes | no |

Contact:
John Finch (509)942-7476
Water Manager

City Of Richland
Public Works Department
WATER DIVISION

COLIFORM MONITORING PLAN

WATER SYSTEM SERVICE INFORMATION

| | |
|--------------------------------|--------|
| Total Population Served: | 44,700 |
| Total Commercial Connections: | 1,861 |
| Total Residential Connections: | 14,571 |
| Total Service Connections | 16,432 |

PRESSURE ZONES

| Pressure Zone | Elevation Feet | Population | Services | % of Total Population | # of routine samples/month | # of routine samples/week |
|---------------|----------------|------------|----------|-----------------------|----------------------------|---------------------------|
| Richland Core | 340-425 | 27000 | 8438 | 60 | 30 | 7 |
| Tapteal I | 425-555 | 12000 | 3750 | 27 | 12 | 4 |
| Tapteal 2 | 555-695 | 4000 | 1250 | 9 | 5 | 2 |
| Tapteal 3 | 660-800 | 1200 | 375 | 3 | 2 | 1 |
| Tapteal 4 | 800-945 | n/a | n/a | n/a | n/a | n/a |
| Tapteal 5 | 945-1095 | 500 | 156 | 1 | 1 | 1 |
| Tapteal 6 | 1090-1240 | n/a | n/a | n/a | n/a | n/a |
| Tapteal 7 | 1240-1390 | n/a | n/a | n/a | n/a | n/a |
| Tapteal 8 | 1390-1480 | n/a | n/a | n/a | n/a | n/a |

City Of Richland
Public Works Department
WATER DIVISION

COLIFORM MONITORING PLAN

| | |
|--|------|
| Minimum Number Of Routine Monthly Samples: | 50 |
| Total Number Of Samples Represent system: | 56 |
| Current Number Of Samples Collected Routinely: | 60 + |

SAMPLING PROTOCOL

Weekly

15 Routine samples are collected by the water quality specialist or by a designated qualified person on Tuesdays between 7:00am to 3:30pm. These samples will be delivered to the Benton Franklin Health Department laboratory before 4:00pm.

Sample status

The results of the samples should be ready 24 hrs after they are turned into the lab. If there is a sample with a coliform presence the lab will notify the water quality specialist or designate. The lab will then test further to check to see if there is E-coli or fecal coliforms present. The lab will send the results positive or negative to the state dept of health and to the City Of Richland water quality specialists.

Responding to a positive coliform result

Within 24hrs of being notified by the lab of a positive coliform sample the water quality Specialist or designate will collect a set of repeat samples.

ANALYSIS

BENTON-FRANKLIN HEALTH DEPARTMENT
7102 W. Okanogan Place
Kennewick, WA 99336
(509)460-4206 Lab #062

City Of Richland
Public Works Department
WATER DIVISION

COLIFORM MONITORING PLAN

SAMPLING SITES
RICHLAND CORE

| Sample station ID # | Description | Location |
|----------------------------|----------------------------|---|
| RC-1 | Routine Sample Site | 1530 Hains Sample Site. |
| RC-1a | Repeat-upstream | 110 saint st. clearwell tap |
| RC-1b | Repeat-Downstream | 1601 George Washington way |
| RC-2** | Routine Sample site | 110 Saint St. Clearwell tap |
| RC-2a | Repeat-upstream | 2205 Harris ave |
| RC-2b | Repeat-Downstream | 217 Saint Street |
| RC-3 | Routine Sample | 2600 clubhouse Lane. |
| RC-3a | Repeat-upstream | 2860 Clubhouse Lane |
| RC-3b | Repeat-Downstream | 2840 Clubhouse Lane |
| RC-4 | Routine Sample Site | 611 Horn Rapids Road |
| RC-4a | Repeat-upstream | 3320 Q Ave |
| RC-4b | Repeat-Downstream | 3345 Horn Rapids Road |
| RC-5* | Routine Sample Site | BFHD 471 Williams Blvd |
| RC-5a | Repeat-upstream | 761 Williams Blvd |
| RC-5b | Repeat-Downstream | 1301 Williams Blvd |
| RC-6 | Routine Sample Site | 415 Wright ave 7-11 store |
| RC-6a | Repeat-Upstream | 507 Wright ave |
| RC-6b | Repeat-Downstream | 2120 Duportail |
| RC-7* | Routine Sample Site | 507 Comstock st |
| RC-7a | Repeat-Upstream | 503 Comstock st |
| RC-7b | Repeat-Downstream | 217 Barth ave |
| RC-8 | Routine Sample Site | 1000 George Wash Way |
| RC-8a | Repeat-Upstream | 505 Swift Blvd |
| RC-8b | Repeat -Downstream | 930 George Washington Way |
| RC-9 | Routine Sample Site | 2645 HR rd fire booster station. |
| RC-9a | Repeat-Upstream | 2890 Horn Rapids rd |
| RC-9b | Repeat-Downstream | 2101 Horn Rapids rd |
| RC-10 | Routine Sample Site | N. Fire Sta. 1900 Jadwin ave. |
| RC-10a | Repeat-Upstream | 1904 Jadwin ave. |
| RC-10b | Repeat-Downstream | 1903 Jadwin ave. |
| RC-11 | Routine Sample site | HR Pump Sta. 2709 SR 240 |
| RC-11a | Repeat-Upstream | 2424 Robertson rd |
| RC-11b | Repeat-Downstream | 3001 River Valley dr |

* These sites are going to be moved

** EP sites

City of Richland
Public Works Department
WATER DIVISION

COLIFORM MONITORING PLAN

SAMPLING SITES
RICHLAND CORE

| Sample station ID # | Description | Location |
|---------------------|-----------------------------|--|
| RC-12 | Routine Sample Site | BFTC.1000 Columbia Park Trail |
| RC-12a | Repeat- Upstream | 939 Columbia park Trail |
| RC-12b | Repeat-Downstream | 1100 Columbia Park Trail |
| RC-13 | Routine Sample Site | 2600 N Columbia Center Blvd |
| RC-13a | Repeat-Upstream | 2594 N Columbia Center BLVD |
| RC-13b | Repeat-Downstream | 2610 N Columbia Center Blvd |
| RC-14** | Routine Sample Site | 1374 Lee Blvd 1182 Sample Sink. |
| RC-14a | Repeat-Upstream | 701 Stevens DR |
| RC-14b | Repeat-Downstream | 714 Thayer DR |
| RC-15 | Routine Sample Site | 660 Columbia point Dr. sample Tap |
| RC-15a | Repeat-Upstream | 480 Columbia pt DR |
| RC-15b | Repeat-Downstream | 560 Columbia pt DR |
| RC-16*** | | |
| RC-16a | | |
| RC-16b | | |
| RC-17 | Routine Sample Site | 485 Bradley Blvd |
| RC-17a | Repeat-Upstream | 299 Bradley Blvd |
| RC-17b | Repeat-Downstream | 156 Bradley Blvd |
| RC-18 | Routine Sample Site | LCS across from 1207 Acacia Ave |
| RC-18a | Repeat-Upstream | 1205 Acacia Ave |
| RC-18b | Repeat-Downstream | 1209 Acacia Ave |
| RC-19 | Routine Sample Sites | 200 Craighill Park |
| RC-19a | Repeat-Upstream | 213 Craighill |
| RC-19b | Repeat-Downstream | 219 Craighill |
| RC-20 | Routine Sample Sites | 1650 Columbia Park Trail |
| RC-20a | Repeat-Upstream | 1645 Columbia Park Trail |
| RC-20b | Repeat-Downstream | 1776a Columbia Park Trail |
| RC-21 | Routine Sample Site | 555 1st ST. NRW Treated Tap. |
| RC-21a | Repeat-Upstream | 667 1 st ST. |
| RC-21b | Repeat-Downstream | 550 3 rd ST. |
| RC-22 | Routine Sample Site | 2500 Van Giesen st Sample Station |
| RC-22a | Repeat-Upstream | 1521 Birch ave |
| RC-22b | Repeat-Downstream | 2522 Van Giesen st |

** EP sample site

*** These Are Left Blank For Future Sample Sites.

City Of Richland
Public Works Department
WATER DIVISION

COLIFORM MONITORING PLAN

SAMPLING SITES RICHLAND CORE

| Sample Station ID # | Description | Location |
|---------------------|----------------------------|------------------------------------|
| RC-23 | Routine Sample Site | 2711 StoneCreek Dr. |
| RC-23a | Repeat-Upstream | 2724 Stonecreek Dr |
| RC-23b | Repeat-Downstream | 2702 Stonecreek Dr |
| RC-24 | Routine Sample Site | 1939 Fowler |
| RC-24a | Repeat-Upstream | 1925 Fowler |
| RC-24b | Repeat-Downstream | 1913 Fowler |
| RC-25** | Routine Sample Site | 1100B Meter Vault 110 Saint |
| RC-25a | Repeat-Upstream | 101 Saint St |
| RC-25b | Repeat-Downstream | 2205 Harris Ave |

** EP Sample Site.

City Of Richland
Public Works Department
WATER DIVISION
COLIFORM MONITORING PLAN
SAMPLING SITES
TAPTEAL 1 PRESSURE ZONE

| Sample Station ID# | Description | Location |
|---------------------------|----------------------------|--|
| T1-1 | Routine Sample Site | 2769 City View Dr. Tap 1 Pump Sta |
| T1-1a | Repeat -upstream | 7-11 store,415 Wright Ave |
| T1-1b | Repeat-Downstream | 1001 Keene Rd. Sample Tap. P.S |
| T1-2 | Routine Sample Site | Fire Station, 710 Gage Blvd |
| T1-2a | Repeat-Upstream | Albertsons,690 Gage |
| T1-2b | Repeat-Downstream | Richland Gardens 770 Gage Blvd |
| T1-3 | Routine Sample Site | 2700 Duportail WQ Office Tap |
| T1-3a | Repeat-Upstream | 2769 City View Dr. |
| T1-3b | Repeat-Downstream | 2601 Queens Gate Dr. |
| T1-4 | Routine Sample Site | 283 Penny Royal Ave. Sample Sta. |
| T1-4a | Repeat-Upstream | Richland Garden 770 Gage Blvd |
| T1-4b | Repeat-Downstream | 1925 Penny Royal |
| T1-5 | Routine Sample Site | M.E. Park 610 Muriel street |
| T1-5a | Repeat-Upstream | 611 Muriel street |
| T1-5b | Repeat-Downstream | 613 Muriel street |
| T1-6 | Routine Sample Site | 204 Edgewood Dr. |
| T1-6a | Repeat-Upstream | 200 Edgewood Dr. |
| T1-6b | Repeat-Downstream | 206 Edgewood Dr. |
| T1-7 | Routine Sample Site | 423 Broadmoor Claybell park |
| T1-7a | Repeat-Upstream | 430 Broadmoor street. |
| T1-7b | Repeat-Downstream | 436 Broadmoor street. |
| T1-8*** | Routine Sample Site | |
| T1-8a | Repeat-Upstream | |
| T1-8b | Repeat-Downstream | |
| T1-9*** | Routine Sample Site | |
| T1-9a | Repeat-Upstream | |
| T1-9b | Repeat-Downstream | |
| T1-10*** | Routine Sample Site | |
| T1-10a | Repeat-Upstream | |
| T1-10b | Repeat-Downstream | |
| T1-11 | Routine Sample Site | 275 Piper St. Sample Sta. |
| T1-11a | Repeat-Upstream | 268 Piper St. |
| T1-11b | Repeat-Downstream | 294 Piper St. |

*** These Left Blank For Future Sample Sites.

Public Works Department
WATER DIVISION

COLIFORM MONITORING PLAN
SAMPLING SITES
TAPTEAL 11 PRESSURE ZONE

| Sample Station ID# | Description | Location |
|--------------------|-------------------------------|--------------------------------------|
| T2-1 | Routine Sample Site | 1001 Keene Rd. Sample Tap. |
| T2-1a | Repeat-Upstream | 1101 Foxtrot Lane. |
| T2-1b | Repeat-Downstream | Tap teal 1 Pump Station. |
| T2-2 | Routine Sample Station | 141 Orchard Way T11 pump Sta. |
| T2-2a | Repeat-Upstream | 139 W. Orchard Way |
| T2-2b | Repeat-Downstream | 146 High Meadows. |
| T2-3 | Routine Sample Sites | 4130 Kimberly |
| T2-3a | Repeat-upstream | 938 Tomich ave |
| T2-3b | Repeat-Downstream | 4150 Kimberly st. |
| T2-4 | Routine Sample Site | 4300 Kennedy Rd. Sample Sta. |
| T2-4a | Repeat-Upstream | 901 Sirron ave. |
| T2-4b | Repeat-Downstream | 4555 Arena Rd. |
| T2-5*** | Routine Sample Site | |
| T2-5a | Repeat-Upstream | |
| T2-5b | Repeat-Downstream | |
| T2-6*** | Routine Sample Site | |
| T2-6a | Repeat-Upstream | |
| T2-6b | Repeat-Downstream | |
| T2-7*** | Routine Sample Site | |
| T2-7a | Repeat-Upstream | |
| T2-7b | Repeat-Downstream | |
| T2-8 | Routine Sample Site | 2984 Lorayne Hydrant |
| T2-8a | Repeat-Upstream | 2966 Lorayne hydrant |
| T2-8b | Repeat-Downstream | 133 Canterbury Rd |

*** These are left Blank For Future Sample Sites.

City Of Richland
Public Works Department
WATER DIVISION

COLIFORM MONITORING PLAN

SAMPLING SITES-TAPTEAL 111

| Sample ID# | Description | Location |
|-------------|------------------------------|--|
| T3-1 | Routine Sampling Site | 1590 Meadow Hills Dr. Sample Sta. |
| T3-1a | Repeat-upstream | 1591 Meadow Hills Drive |
| T3-1b | Repeat-Downstream | 1613 Meadow Hills Drive |

City Of Richland
Public Works Department
WATER DIVISION

COLIFORM MONITORING PLAN

SAMPLING SITES
TAPTEAL V SITES PRESSURE ZONE

| Sample Station ID# | Description | Location |
|--------------------|----------------------------|----------------------------------|
| T5-1 | Routine Sample Site | 303 Meadow Hills Dr. P.S. |
| T5-1a | Repeat-Upstream | Meadow Hills Reservoir. |
| T5-1b | Repeat-Downstream | 292 Meadow Hills Dr. |
| T5-2 | Routine Sample Site | 135 Meadow Hills Dr. |
| T5-2a | Repeat-Upstream | 146 Meadow Hills. |
| T5-2b | Repeat-Downstream | 133 Meadow Hills Dr. |

COLIFORM MONITORING PLAN

MISC. BACTERIOLOGICAL SAMPLING & SITE DEVELOPMENT

In addition to weekly routine sample collection other coliform samples are collected as listed.

| DESCRIPTION | LOCATION |
|--------------------------|----------------------------------|
| Raw water samples | Water sources |
| Water quality complaints | Per customer request / House tap |
| New construction | Distribution system / extensions |
| System repairs | Distribution system |
| Storage tanks | Reservoirs |

New sample sites have been installed and more are proposed this has and will provide an improved representation of the distribution system.

PLAN PREPARATION

| Prepared by: | Date: | Job Title: | Phone Number: |
|--------------|----------|---------------------------|---------------|
| Kim Duncan | 10-31-91 | Water quality coordinator | (509)942-7474 |

| | |
|--------------|-------|
| Reviewed by: | Date: |
|--------------|-------|

PLAN REVISION

| Prepared by: | Date: | Job Title: | Phone Number: |
|--------------|----------|---------------------------|---------------|
| Kim Duncan | 09-14-95 | Water quality coordinator | (509)942-7474 |

| | |
|--------------|-------|
| Reviewed by: | Date: |
|--------------|-------|

PLAN REVISION

| Prepared by: | Date: | Job Title: | Phone Number: |
|--------------|----------|---------------------------|---------------|
| Kim Duncan | 08-17-01 | Water quality coordinator | (509)942-7474 |

| | |
|--------------|-------|
| Reviewed by: | Date: |
|--------------|-------|

LATEST REVISION

| Prepared by: | Date: | Job Title: | Phone Number: |
|--------------|----------|---------------------------|---------------|
| Kim Duncan | 08-28-07 | Water quality coordinator | (509)942-7474 |

PLAN REVIEW

| | |
|-----------------|-------|
| System Manager: | Date: |
| State Reviewer: | Date: |
| | |

RESERVOIR, WELL & PUMP FACILITIES LOCATIONS

CITY OF RICHLAND

LEGEND

- WATER PUMP STATION
- WATER RESERVOIRS
- WELLS
- WATER MONITORING SITE
- WATER MONITORING SITE (STAGE 1)
- IRRIGATION PUMP STATION
- CITY LIMITS
- UGA



WELLS

| WELL | PRODUCTION CAPACITY |
|----------------------------------|----------------------|
| NORTH RICHLAND WELLFIELD: | |
| EAST: 3000-C | 1000 GPM Production |
| 3000-H | 1000 GPM Production |
| 3000-E | 2,000 GPM Production |
| WEST: | |
| 3000-A | 1000 GPM |
| 3000-B | 1000 GPM |
| 3000-D | 1000 GPM |
| 3000-J | 1000 GPM |
| 3000-L | 1000 GPM |
| DUKE WELLS (A & B) | STAND BY |
| COLUMBIA WELLFIELD #1100-B | 600 GPM |
| WELLSIAN WAY WELLFIELD #13-A | STAND BY |
| WELLSIAN WAY WELLFIELD #14 | 300 GPM |
| WELLSIAN WAY WELLFIELD #5 | 600 GPM |
| WILLOWBROOK WELL | STAND BY |
| HARRISON WELL | 600 GPM |

WATER RESERVOIRS

| RESERVOIR | STORAGE CAPACITY (MG) | OVERFLOW ELEV. |
|----------------------|-----------------------|----------------|
| WTP CLEARWELL (2) | 2.2 MG | 308.4' |
| 1182 RESERVOIR NORTH | 10 MG | 308.7' |
| 1182 RESERVOIR SOUTH | 10 MG | 308.7' |
| 5 MILLION GALLON | 5.0 MG | 345.7' |
| 10 MILLION GALLON | 10.0 MG | 345.7' |
| TAPTEAL 1 "A" | 7.0 MG | 345.7' |
| TAPTEAL 1 "B" | 2.0 MG | 345.7' |
| COUNTRY RIDGE "A" | 3.4 MG | 768.7' |
| COUNTRY RIDGE "B" | 3.4 MG | 768.7' |
| TAPTEAL 2 "A" | 3.0 MG | 768.7' |
| TAPTEAL 2 "B" | 7.0 MG | 768.7' |
| WESTCLIFFE "A" | 3.1 MG | 600.3' |
| WESTCLIFFE "B" | 3.1 MG | 600.3' |
| MEADOW HILLS | 3.0 MG | 1000.3' |

SANITARY WATER PUMP STATIONS

| STATION | SOURCE RESERVOIR to DESTINATION RESERVOIR | PUMPING CAPACITY |
|--------------------|--|----------------------|
| 1 KINGSGATE | Fire Booster Pump To Horn Rapids Zone | 1000 GPM (Stand By) |
| 2 HORN RAPIDS | 5 & 10 MG to Horn Rapids Zone | 3000 GPM (4 Pumps) |
| 3 WTP INTAKES | River to WTP Clearwell & North Richland Wellfield Reservoirs | 20,000 GPM (9 Pumps) |
| 4 WTP HIGH SERVICE | WTP Clearwell to 5 & 10 MG | 34,000 GPM (7 Pumps) |
| 5 1182 | 1182 to 5 & 10 MG | 4000 GPM (9 Pumps) |
| 6 BADGER MOUNTAIN | 5 & 10 MG to Tapteal I | 3000 GPM (3 Pumps) |
| 7 KEENE ROAD | Tapteal I to Country Ridge | 1000 GPM (2 Pumps) |
| 8 BROOKWOOD | Fire Booster Pump in Tapteal II Zone | Stand By |
| 9 TAPTEAL II | Tapteal I to Tapteal II | 3000 GPM (3 Pumps) |
| 10 WESTCLIFFE | Tapteal II to Tapteal II | 3000 GPM (3 Pumps) |
| 11 MEADOW HILLS | Tapteal II to Meadow Hills | 700 GPM (2 Pumps) |

IRRIGATION PUMP STATION

- 1 COLUMBIA POINT
- 2 COLUMBIA POINT MARINA
- 3 I-182/YAGMA RIVER BRIDGE
- 4 HORN RAPIDS

WATER SAMPLE STATIONS

- 1 140 MEADOW HILLS DR
- 2 204 EDGEWOOD
- 3 VAN GIBSEN & BY-PASS
- 4 270 STONECREEK
- 5 276 PIPER
- 6 1000 GEORGE WASH WAY
- 7 1800 JADWIN AVE
- 8 283 PENNY ROYAL AVE
- 9 4150 KIMBERLY ST
- 10 1850 COL PARK TRL
- 11 2800 CLUBHOUSE LN
- 12 4300 KENNEDY RD
- 13 611 HORN RAPIDS RD
- 14 291 BRADLEY BLVD
- 15 1850 MEADOW HILLS DR
- 16 611 MURIEL ST
- 17 885 1ST ST
- 18 423 BROADMOOR ST
- 19 2200 WILLIAMS BLVD
- 20 213 CRAIGHILL AVE
- 21 2800 N. COLUMBIA CTR. BLVD.
- 22 COLUMBIA PNT. MARINA

STANDARD MONITORING SITES

- 1 2845 HORN RD
- 2 1800 JADWIN AVE
- 3 2500 VAN GIBSEN ST
- 4 271 STONE CREEK DR
- 5 1838 FOWLER ST
- 6 10 SAINT ST
- 7 276 PIPER ST
- 8 2884 LORAYNE BLVD

STAGE 1 MONITORING SITES

- 1 2800 CLUBHOUSE LN
- 2 611 HORN RAPIDS RD
- 3 2900 N COLUMBIA CENTER BLVD
- 4 600 COLUMBIA POINT DR
- 5 200 CRAIG HILL AVE
- 6 1800 COLUMBIA PARK TRAIL
- 7 283 PENNY ROYAL AVE
- 8 ME PARK 610 MURIEL ST
- 9 142 BROADMOOR ST
- 10 2700 DUPORTAL ST
- 11 4300 KENNEDY RD
- 12 135 MEADOW HILLS DR

PRESSURE ZONES

- 1 TAP I
- 2 TAP II
- 3 TAP III
- 4 TAP IV
- 5 TAP V
- 6 TAP VI
- 7 TAP VII
- 8 TAP VIII

WATER LINES

- 1 12" WATER LINES
- 2 14" WATER LINES
- 3 16" WATER LINES
- 4 18" WATER LINES
- 5 20" WATER LINES
- 6 24" WATER LINES
- 7 27" WATER LINES
- 8 30" WATER LINES
- 9 36" WATER LINES



D:\CML\Projects\0_Various_Map\City Reserv Well & Pump_L10.dwg
Date: 02-13-06