Guideline for Group B

Public Water System Approval

January 2010

Contents

Introduction

A safe and reliable drinking water supply is of fundamental importance to our health and well being. This workbook is intended to help designers of Group B public water systems with 3-9 residential connections and non-residential use to ensure that the requirements of providing a safe and reliable drinking water supply and protecting public health are met. If you plan to expand your system to serve more than 9 residences or more than 24 people per day in the future, you are advised to proceed as if the system were a Group A public water system. Otherwise, you may find it far more difficult and expensive to meet your future system expansion plans, or even jeopardize your ability to expand at all. (See WAC 246-291-001[3])

This workbook was designed for owners of rural residential water systems, which include most Group B applicants. If the system provides water to a business or other non-residential use, or if this is an existing non-expanding system, the requirements for approval may vary.

Restaurants, small businesses, churches, schools, government agencies and resorts are examples of small public water systems with their own unique design needs. In these cases or for existing systems, contact Clark County Public Health for special instructions.

Using this workbook will help simplify water system design and analysis procedures and help ensure compliance with the appropriate standards, requirements, and regulations. Equivalent information may be submitted in a different form if you choose. We encourage all water system owners to obtain professional assistance in the design of their water system.

Owners of systems with 9 or more connections or with special treatment requirements other than simple chlorine disinfection are required by ***Washington State Drinking Water Regulations (WAC 246-291-040)*** *to hire a licensed professional* engineer (P.E.) to design their systems and submit required documents to Clark County Public Health, and can not use this workbook.

Finally, care should be taken in the completion of this workbook/application. Prior to submittal for approval, copies of all worksheets and forms should be made, and kept in your permanent records. Some of the information will be helpful in the maintenance and operation of your system, and may make it easier to finance and/or sell your property.

GROUP B APPLICATION CHECKLIST

SECTION I

PART A: Basic Information ☐

PART B: Ownership and Management ☐

PART C: Source Site Information

Water Right Permit (If needed) ☐

Source Site Inspection ☐

Wellhead Protection Inventory ☐

Source Location & Protection Sketch ☐

Sanitary Control Covenants (Signed, but not filed) ☐

SECTION II

PART D: Water Source Construction Approval

Well Report of Log ☐

Pump Test Results ☐

Water Quality Test Results:

Coliform ☐

Inorganic Chemical/Nitrate ☐

*(Contact Local Health Department re: specific tests required)

Volatile Organic Chemical/SOC/Pesticides/etc. * ☐

*(Required if vulnerable)

Declaration/Restrictive Covenants-Filed ☐

PART E: Financial Viability Worksheet ☐

PART F: Pump and Pumphouse Information ☐

PART G: Pressure Tank/Storage Facilities ☐

PART H: Treatment (If applicable) ☐

PART I: Distribution System ☐

PART J: Reliability Information ☐

Completed Water Facilities Inventory (WFI) Form ☐

Water Line, Well, Pumphouse Access Easements Recorded ☐

Title Notices Recorded ☐

SECTION I

For additional assistance in completing parts A through C of this workbook, refer to Appendix I, Basic System and Source Information

PART A: Basic System Information

1. Name of Water System:_____
2. System Mailing Address:_____
3. County:_____
4. Well Site Tax Parcel Number:_____
5. Legal Description of Well Site:
   _____(1/4), _____(1/4) Section_____ Township_____ Range_____

   Latitude_____ Longitude_____

   Subdivision Name or Number_____

6. Year System Installed:_____

7. Located in Critical Water Supply Service Area: Yes ☐ No ☐
   Coordinated Water System Plan: Clark County
   Name of Existing System having priority for providing service: _____
   Note: Must submit justification for developing new independent system. If no, provide written verification that you have contacted each of the following to determine whether direct or satellite service could be provided. (Refer to Appendix I, Part A, #2 for additional information.)

   i. If applicable, the public water system which has a service area identified in a DOH approved water system plan was contacted regarding the possibility of service.
   ii. Each existing public water system serving property within 1000 feet of the subject property.
   iii. Available DOH-approved satellite management agencies.

8. Number of Services: Existing _____ Proposed_____
   Please provide Parcel Number and Address of Service:
   _____
   _____
   _____

   (**NOTE:** Each customer or residential connection is a service, i.e., house, lot, apartment, mobile home space, or commercial hookup)

9. Type of Service: (Enter the number of service connections in each appropriate blank space)
   Permanent ☐ Temporary ☐ Seasonal ☐ Residential ☐ Recreational ☐

   Commercial ☐ *or* Daily Population Served_____

10. **Vicinity and Service Area Sketch:**
Sketch in the space provided below, or a simple map showing directions to the site and the area to be served by this system. Include at least two crossroads.

PART B: Ownership and Management

1. Water System Owner: Enter name of person(s), association or corporation. If an association or corporation has been formed, attach a copy of the association by-laws, joint use & maintenance agreement, or other documents providing information regarding future financial and maintenance responsibilities. If the system is owned by one or more individuals, **the owner(s) must attach and sign a statement of responsibility or complete Item #2 below for any maintenance or repairs involved in the continuing operation of the system**. See Appendix I, Part B for additional information.

Name _____

Address_____

_____

Telephone Number (day) _____ (evening) _____

2. Owner's Statement Of Responsibility:

I, the undersigned, do hereby attest that as the owner of this water system I am responsible for any maintenance or repairs involved in the continuing operation of this system

Signature_____

Date _____

3. System Contact Person: (if different than above)

Name _____

Address_____

_____

Telephone Number (day) _____ (evening) _____

4. Contact Person For Maintenance, Water Quality Sampling, Customer Notification, & Complaint Response: (if different than above)

Name _____

Address_____

_____

Telephone Number (day) _____ (evening) _____

NOTE: If this system is owned or operated by a Satellite Management Agency, please attach a copy of the agreement.

5. Person Preparing This Workbook:

Name _____

Address_____

_____

Telephone Number (day) _____ (evening) _____

6. Owner's Statement Of Accuracy:

I, the undersigned, do hereby attest that I am the owner of this water system and that the information provided in this workbook is accurate to the best of my knowledge.

Signature_____

Date _____

PART C: Water Source Approval

If an alternative water source is proposed, i.e. a spring, dug well or surface water, contact CCPH at (360) 397-8428 for special requirements.

1. **Water Right Permit:** (See Appendix I, Part C, #1 for requirements) Attach a copy of water right permit (if required).
   a. Is separate irrigation provided? Yes ☐ No ☐
   If yes, source of irrigation is: _____
   (**NOTE:** Source could be private wells or surface water, non-district.)

2. **Well Site Evaluation Report:** All Group B Water Systems **must** have a well site evaluation prior to the well being constructed. (See Appendix I, Part C, #2 for Well Site Evaluation Application). Please attach a copy of the completed evaluation report. If any improvements were recommended, attach receipts, work orders or photographs to show that the work was completed. Existing wells proposed for the Group B Public Drinking Water sources do not require this report.

3. **Sanitary Control Zone:** The owner(s) of a public water system must prevent uses of the land within at least a 100 ft. radius around the well which could contaminate the water source.

   a. **Site Protection Map:** (See Appendix I, Part C, #3b for explanation)

   Sketch in the space provided on page -- or **attach** a detailed topographical map or plat clearly showing the well site, ground slope, a 100 ft. and 600 ft. radius around the well, and distances from the well to property lines, buildings, roads and potential sources of contamination. **(Note: Either the sketch or the attached map should be of sufficient scale to accurately identify all of the required details noted above.)**

   b. **Wellhead Protection Inventory:** Please indicate if any of the following are present within a circular area around your water source having a minimum 600 foot radius; the 600 foot radius being substituted for the ten year ground water travel time. Please indicate these potential sources of contamination on the Site Protection Map.

	YES	NO	UNKNOWN
Likely pesticide application (commercial agriculture & residential)	☐	☐	☐
Storm water injection wells or disposal areas	☐	☐	☐
Other injection wells	☐	☐	☐
Abandoned ground water wells	☐	☐	☐
Landfills, dumps, disposal areas within 1000 ft.	☐	☐	☐
Known hazardous materials site within 1000 ft.	☐	☐	☐
Water sources with known water quality problems	☐	☐	☐
Population density greater than 1 house/acre	☐	☐	☐
Residential septic tanks and drainfields	☐	☐	☐
Underground and above ground storage tanks	☐	☐	☐
Sewer lines	☐	☐	☐

c. **Sanitary Control Covenants:** Attach copies of any Declaration of Covenants or Restrictive Covenants that have been prepared to protect the water source from activities or practices that could cause contamination. See Appendix I, Part C-3. Covenants do not need to be filed with the County Auditor until prior to final approval of the water system.

1. Declaration of Covenant:
   Include a copy of plat, or Auditor File No. if recorded separately.

2. Restrictive Covenant:
   Include a copy of plat, or Auditor File No. if recorded separately.

SECTION II

For additional assistance in completing parts D through J of this workbook, refer to Appendix II, Group B Water System Design

PART D: Water Source Information

1. **Well Construction:**
   a. Existing Well _____ New Well _____
   b. **Well Log**: Attached _____ Not Available _____
   (See Appendix II, Part D, #1 for explanation)
   c. **Well Tag Number**: _____
   (If the well does not have this tag ID No. affixed to the casing, please contact our office at (360) 397-8428).
   If well log is not available, please provide the following information:
   1. Well Depth _____
   2. Casing Diameter To What Depth: _____ Casing material: _____
   3. Normal Or Static Water Level _____
   4. Surface Seal: Yes ☐ No ☐ To Depth: _____ Material:_____
   5. Ground Surface Elevation (above mean sea level) _____
   6. Screens or Perforations:: Yes ☐ No ☐ Depth:_____

   d. **Totalizing Source Meter:** Attach documentation that a totalizing source meter will be installed on each source. (As an ongoing operational requirement, this meter shall be read monthly and the reading logged in the operator's records.)

2. **Water Quality Tests:** All water quality tests must be performed by state certified laboratories and results must be on state approved forms. For additional details refer to Appendix II, Part D #3.) Attach copies of the following test results:
   a. **Bacteriological** (Coliform)
   b. **Inorganic Chemical/Primary and Secondary Contaminants**
   c. **Other Specific Tests/Analyses** (if in an area of special concern)

3. **Request for Water Sample Review**: Affidavit signed by sample collector
   (Form provided in Appendix III)

PART E. Financial (Viability) Worksheet

Through the development of a projected budget, the goal of the Financial Viability Worksheet is to set in place plans, policies, and procedures that will enable the system owner(s) to have the ability to obtain sufficient funds, on a continuing basis, to cover the total cost of developing, constructing, operating and maintaining the system in compliance with State and Local drinking water regulations. Proposed rates must be adequate to cover any budget deficits identified in line 16. **For more information refer to Appendix II, Part E.**

ANNUAL EXPENSES	Initial Development	After Full Development or Build-out
1. Wages & Benefits	$_____	$_____
2. Electricity & other utilities	$_____	$_____
3. Chemicals & Treatment	$_____	$_____
4. Monitoring Costs	$_____	$_____
5. Materials, Supplies, & Repairs	$_____	$_____
6. Taxes/Assessments	$_____	$_____
7. Insurance/Misc. Expenses	$_____	$_____
8. Subtotal - Operating Expenses	$_____	$_____
9. 10% Contingency	$_____	$_____
10. Principal and Interest Payments	$_____	$_____
11. System Replacement	$_____	$_____
12. Total Revenue Required	$_____	$_____
ANNUAL REVENUE FROM SOURCES OTHER THAN WATER RATES		
13. Hook Up/Other User Fees	$_____	$_____
14. Other Revenue	$_____	$_____
15. Total Non Water Rate Revenue	$_____	$_____
ANNUAL WATER RATE CALCULATIONS		
16. Budget Surplus/Deficit (Line 15 minus line 12)	$_____	$_____
17. Number of Connections	_____	_____
18. Annual Water Rate* (Line 16 divided by Line 17)	$_____	$_____

(*Note: If individual meters are used, this can be the average rate, with individual rates varying depending on usage.)

PART F: Source Capacity, Pump, and Pumphouse Information

1. **Source Capacity:** (See Appendix II, Part F, Table 1, page 25.)
   a. Number of connections _____
      Maximum required peak flow _____ (gpm) from MID, Table I,Appendix II
   b. Required daily production _____ (gpm) _____ (gpd)
   c. Pump test results: Attach a copy of results and indicate:
      Source capacity (gpm) when draw down has stabilized:_____

2. **Source Pump:**
   a. First determine the headloss that will be associated with the distribution pipe by using Table A below. (See Appendix II, Table 2, page 29 and example on page 31.)

TABLE A – Headloss

From	To	Connection	MID	Diameter	Headloss per 100'	Length	Total Headloss

- See Appendix II, Table 1 for values MID (Maximum Instantaneous Demand) on page 25.
- See Appendix II, Table 2, for pipe headloss per 100 ft. values on page 29.
- Select the single largest total headloss of pipe to a connection and use this value where it asks for the headloss in Table B on the following page.

PART F: Source Capacity, Pump, and Pumphouse Information (continued)

b. Calculate total required pump head using Table B below.

TABLE B – Total Required Pump Head

	WELL PUMP	PUMP #2 (BOOSTER PUMP IF NEEDED)
DISTANCE FROM PUMPING LEVEL IN WELL TO GROUND SURFACE (WELL HEAD)*♦	_____FEET	_____FEET
ELEVATION DIFFERNECE FROM WELL HEAD TO POINT OF DELIVERY	_____FEET	_____FEET
GREATEST HEADLOSS (Note: this number from hydraulic analysis – Table A)	_____FEET	_____FEET
PRESSURE RESIDUAL HEAD (30 PSI = 70 FEET OF HEAD)**	_____FEET	_____FEET
TOTAL REQUIRED PUMP HEAD	_____FEET	_____FEET

* Provide headloss if riser pipe length is greater than 100 feet. Also provide diameter of pipe, length and type of pipe used.

♦ Distance from pumping level in well to ground surface (Static water level + Drawdown)

** If pumping to nonpressurized storage, then the residual head would be zero. Also use this method if the source pump delivers to a storage tank where repumping is necessary; then a residual of zero or close to zero may be considered in pump sizing.

A licensed Professional Engineer is required if a booster pump is used.

PART F: Source Capacity, Pump, and Pumphouse Information (continued)

3. **Pump Specifications:**
   Attach pump curve or performance chart.

   a. Type _____ b. Manufacturer _____
   c. Model _____ d. RPM _____
   e. Horsepower _____ f. Pump Rate (gpm) _____
   g. Single phase/Three phase _____

4. **Booster Pump:**
   If a booster pump is required, a licensed professional engineer must design the system. Attach pump curve or performance chart.

   a. Type _____ b. Manufacturer _____
   c. Model _____ d. RPM _____
   e. Horsepower _____ f. Pump Rate (gpm) _____
   g. Single phase/Three phase _____

5. **Pumphouse:**
   The pumphouse shall be adequately designed to allow access, service and security for equipment. Attach a schematic drawing of the pumphouse plan including dimensions and piping. Complete the check list below to ensure the pumphouse and well plans have all the required features.

   a. Well location:
      In pumphouse_____ outside pumphouse_____
   b. If pitless adapter used, please note make and model #: _____
      Pitless unit must comply with NSF or DOH standards.
   c. Tightly secured gasketed well cap: Yes _____ No _____
   d. Does well casing extend a minimum 6 inches above finished floor surface:
      Yes _____ No _____ (extends a minimum 6 inches above finished floor surface)
   e. Screened vent on well cap: Yes _____ No _____
   f. Insulation in pump house: Yes _____ No _____
   g. Heating available: Yes _____ No _____ (heater should be wall mounted and thermostat controlled)
   h. Pump house wiring permit and inspection by Labor and Industrial: Yes _____ No _____
   i. Concrete flooring: Yes _____ No _____ (minimum 4 inches thick and sloped away from well toward floor drain)
   j. Floor drain: Yes _____ No _____ (Piping for floor drain should be daylighted away from building)
   k. Sample tap prior to pressure tank: Yes _____ No _____
   l. Pressure gauge: Yes _____ No _____
   m. Pumphouse ventilation: Yes _____ No _____
   n. Locks for doors: Yes _____ No _____
   o. Rodent proof: Yes _____ No _____

Part G: Pressure Tank and Storage Facilities

1. **Equalizing Storage:**
   a. Amount of equalizing storage needed _____ (as calculated in Appendix II, Part G, page 38.

2. **Pressure Tank:**
   Attach manufacturer's specification sheet
   a. Manufacturer:_____ b. Model: _____
   c. Is pressure tank for pump protection: Yes _____ No _____ Other purpose _____
   d. Pressure tank(s): Horizontal _____ Vertical _____ Bladder type Other _____
   If other, describe: _____
   Air Makeup by: Snifter valve _____ Compressor _____ Other _____
   e. Total Capacity: _____ gallons
   f. ASME pressure relief valve installed: Yes _____ No _____
   g. Pressure range settings: Minimum _____ psi Maximum _____ psi

3. **Storage Tank:**
   If system design requires nonpressurized storage, a licensed professional engineer must design the system.
   Attach manufacturer's specification sheet showing the tank is approved for drinking water contact by NSF, FDA, or ANSI. In addition, if different multiple tanks are utilized, the same information for each tank must be provided.
   a. Manufacturer: _____
   b. Model:_____
   c. Capacity: _____ gallons
   d. Dimensions: Length: _____ Width: _____ Height _____
   e. Material: _____
   f. Screened venting provided: Yes _____ No _____
   g. Tightly sealed access provided: Yes _____ No _____
   h. Drain to daylight provided: Yes _____ No _____

Part H: Treatment

For hypochlorinators designed for water disinfection only, please attach a completed Hypochlorination Facilities For Small Systems Submittal Checklist. Copies of the checklist are available at our office.

PART H: Treatment

1. Chlorination for: Precaution _____ Bacteriological Quality _____
   For hypochlorinators, please attach a completed Hypochlorination Facilities For Small Systems Submittal Checklist.
2. Additional Treatment: If treatment is required, please indicate what is to be treated and the treatment device that you have selected.

Note: All treatment systems other than simple chlorination must be designed by a licensed professional engineer in the State of Washington and must comply with NSF/ANSI standards. For Iron/Manganese treatment, all the items on Iron and Manganese Submittal Checklist available from DOH must be addressed. For other types of treatment include all calculations, design criteria, and pilot study data with this workbook. The treatment system must be inspected by the engineer after installation and a completion of construction report signed by him/her prior to final approval.

PART I: Distribution System

1. **System Diagram:** ***Attach a detailed map or diagram including all of the following information:***
   a. Property Lines, Individual Lot Lines, and Easement Locations
   b. **Well Site** (*clearly marked*)
   c. Utility Location (electrical)
   d. Customer Services or Connections (Include parcel number and address)
   e. Distribution Lines (including pipe lengths, pipe diameters, materials, valves, blow-offs, age and condition)
   f. Elevation Differences (Provide topographic map
   g. Cross Connection Control Devices (location and type)
   h. Home Irrigation/ Private wells
   i. Size Of Lots Served (usually in acres or square feet)
   j. Roads
   k. Will individual service meters be provided? Yes _____ No _____

2. Easements: Attach copies of all required easements for pipes and other water system components. Easements may be recorded with the final plat, or filed with the Auditor's office separately prior to approval of the water system..

PART J: Reliability

What provisions, if any, have been made to ensure system reliability during power outages, pump failures, or other system component failures (check appropriate items below). Chapter 246.291 WAC requires new and expanding systems to be equipped with a generator disconnect switch.

____ Generator Disconnect (Transfer Switch)
____ Inter-tie with another system (**Note**: May require revised water right)
____ Backup power source
____ Parallel Pumps
____ Stand-by storage with gravity feed

Other (Please List)

_____
_____
_____
_____
_____