

Appendix 2—Station description

Appendix 2A—*Contents of a station description*

Specific information about a field site (station) is summarized in a station description. The description should include:

1. Location of station
2. Station history
3. Drainage area (including basin characteristics)
4. Station description, equipment, and benchmarks
5. Discharge and monitor measurements methods and historical extremes
6. Cross-section measurements (discharge and water-quality)
7. Purpose and cooperation
8. Maps, photographs, and permits
9. Safety hazards, detailed road log, and access remarks

Appendix 2B—*Example of a station description for the Columbia River at Beaver Army Terminal near Quincy, Oregon*

U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

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Description of Gaging Station

14-2469.00 Columbia River at Beaver Army Terminal nr Quincy, OR

LOCATION: Lat 46 °10'55", Long 123 °10'50", in NE1/4 sec 16, T.8 N., R.4 W., Columbia County, in an unused warehouse on 1600 ft long dock operated and maintained by Portland General Electric.

HISTORY: Stage data collected May 1968 to June 1970, Feb. 1991 to present. Stork Servex Surfrow Mark 4 UVM (Ultrasonic Velocity Meter) installed June 1991. ORE Accusonic Model 7300 UVM installed Apr. 1997.

DRAINAGE AREA: 256,900 sq mi.

GAGE ON DOCK (LEFT BANK): Stage and velocity sensing equipment housed in room at warehouse. Data is recorded on a Campbell Scientific CR10X data logger. Data logger is connected to modem (phone number 503-728-2376). USGS computer downloads data from data logger on a daily schedule.

A. Stage: An 18 inch diameter corrugated pipe well is attached to a wood piling directly under the gage house floor. The top of the well is at approximately 20 ft gage datum. The bottom of the well

is capped and at elevation -1.0 ft gage datum. Several holes along the length of the well provide communication. An SDI-12 shaft encoder with float/tape system senses stage in the well and is recorded by the data logger. Range is -1.0 to +14 ft. Gage is referred to an electric tape gage (index elevation 22.672 ft gage datum, 23.192 ft sea level, from levels of 9-15-99) on the instrument shelf, RP1, or a staff gage (0 - 13.5 ft) at the downstream end of the dock.

B. Velocity (Stork Servex SurfFlow Mark 4 UVM): Four transducers with a frequency of 100 KHZ are located in a crossed path configuration.

Left bank transducers are located on the upstream and downstream ends of the dock. Cables run under the dock surface and are wired directly into the UVM console. A junction box is located above high water near each transducer. Transducers are attached to an aluminum carriage that can be raised and lowered from the water surface. The carriages roll inside an aluminum channel track, which are bolted to the wooden dock pilings. The top of the upstream aluminum channel is at approximately 12 ft gage datum, extends down to -25.5 ft gage datum, and the transducer is positioned at -21 ft gage datum. The top of the downstream aluminum channel is at approximately 10 ft gage datum, extends down to -27 ft gage datum, and the transducer is positioned at -25 ft gage datum.

Right bank transducers are mounted on a 3 pile steel dolphin near the right bank, across the river from the dock. Transducer cables run up the piling to a responder, which relays signals received from the left bank transducers. There is no hard wire link across the channel. Transducers are attached to an aluminum carriage and can be raised and lowered from the water surface. Right bank transducer carriages roll along the face of the 'H' piling. The top of the piling is at approximately 25 ft, and the bottom at -35 ft. Total length at piling is 90 ft. These transducers are positioned at approximately -25 ft gage datum.

Path length and angles (determined 2-4-97):

Line 1: Upstream Oregon side. Length = 1906.4 ft, angle = 56.6°.

Line 2: Downstream Oregon side. Length = 1770.7 ft, angle = 69.9°.

Combined length = 3677.1 ft, combined angle = at 63.3°.

C. Velocity (ORE Accusonic Model 7300 UVM): Two transducers, with a frequency of 200 khz, located inside the piling area of the 1600 ft long dock, sense velocity in a 'short path'. Transducers are wired directly into the UVM console which is located in the gage house, cables are threaded through the underside of the dock. The UVM's SDI-12 output sends velocity data in feet per second to the CR10.

The upstream transducer is attached to shoreward side of dock piling, is located 160 ft downstream of gage house (cable length 190 ft), and is aimed in a shoreward/downstream direction. The downstream transducer is attached to upstream dock piling on downstream end of dock, is located 450 ft downstream and 250 ft streamward (cable length 735 ft), and is aimed in a streamward/upstream direction. The angle of the transducers in relation to the dock is 33°, path length is 386 ft (determined 4-10-97). Transducers are attached to 2 inch aluminum pipe which can be raised/lowered by sliding through pipe brackets, both transducers are positioned at approximately -4.0 ft gage datum. The transducer pipe brackets are accessible from a wood boardwalk which is below the road surface of the dock.

GAGE ON PILING (RIGHT BANK): Water temperature/conductance sensor and 2 transducers (Stork UVM) attached to 3 pile steel dolphin near right bank across from dock. CR10X data logger, modem, cell phone (phone number 503-784-0136) and Stork SurfFlow UVM responder housed in a 1ft X 3ft X 4ft metal enclosure. Data logger records data from sensors. USGS computer downloads data from data logger on a daily schedule.

A HIF temperature/conductance probe is mounted on the upstream piling near the right bank side, in the main flow on the Washington side of the River.

BENCH MARKS: Levels last run 9-15-99.

BM 6 - could not be found at time of levels on 9-15-99, consider it destroyed.

RM 1 - could not be found at time of levels on 9-15-99, consider it destroyed.

TBM 2 - head of a 5/8" carriage bolt which attaches the guard curb to the dock roadway near the gage. The bolt is 3 ft streamward from the NW corner of the building which houses the gage, established 1966. Elevation 20.540 ft gage datum, 21.060 ft sea level. Used as the base RM for 9-15-99 levels.

RM 3 - NE corner (painted yellow) of square concrete pedestal of overhead light fixture 40 ft shoreward and 5 ft downstream from downstream corner of west end of dock, and 37 ft shoreward of RM 4, established 9-15-99. Elevation 20.690 ft gage datum, 21.210 ft sea level, from 9-15-99 levels.

RM 4 - NE corner (painted yellow) of square concrete pedestal of overhead light fixture, 3 ft shoreward and 5 ft downstream from downstream corner of west end of dock, established 9-15-99. Elevation 21.205 ft gage datum, 21.725 ft sea level, from 9-15-99 levels.

RP 1 - head of 1/2 inch lag bolt painted yellow in side of walkway 18 ft downstream and 4 ft shoreward of TBM 2, established 9-15-99. This RP can be used as a tape down to water surface. Elevation 19.423 ft gage datum, 19.943 sea level, from 9-15-99 levels.

Datum of gage is 0.52 ft above mean sea level.

DISCHARGE MEASUREMENTS: Made by Acoustic Doppler Current Profiler (ADCP) with boat at section 1000 - 1500 ft downstream from gage, and just below dock. Hazards occur from floating debris, particularly at high flow. During low flow, measurement times should be coordinated with the tide cycle for steady flow.

FLOODS: Maximum daily discharge 864,000 cfs Feb. 10, 1996; maximum gage height 13.33 ft Feb. 9, 1996.

POINT OF ZERO FLOW: Tide effect reverses flow during low-flow periods.

WINTER FLOW: No ice effect.

REGULATION: Flow regulated by many reservoirs in the basin.

ACCURACY: Measuring conditions are good except at extremely low velocities.

COOPERATION: U.S. Army Corps of Engineers, State of Oregon Department of Environmental Quality.

MAPS: Station can be located on Clatskanie, Oregon-Washington 15 minute 1952 USGS topographic sheet.

PHOTOGRAPHS: On file at Portland Field Office.

PERMITS: Permits from Corps of Engineers, Washington Department of Fisheries, Cowlitz County Washington, and Portland General Electric on file at Portland Field Office.

ROAD LOG:

Columbia River at Beaver Army Terminal nr Quincy, OR 14-2469.00

<u>Interval</u>	<u>Total</u>	<u>Local</u>
0.0	0.0	Oregon Hwy 30 at Longview Bridge
3.7	3.7	Alston Mayger Rd. Turn right.
0.2	3.9	Intersection. Turn right in front of grocery store.
6.7	10.6	Intersection Fish Station Rd. Continue on main road.
2.3	12.9	Unmarked intersection. Turn right.
1.2	14.1	Guard station. Check in. Go straight.
0.5	14.6	Boat launch.
0.3	14.9	Dock. Stilling well and AVM is in west end of large wood building. Go through second door from west side.

Alternate route which goes through Clatskanie, recommended when towing large boat. This route is narrow and winding.

0.0	0.0	Downtown Clatskanie at intersection of Hwy 30 and Nehalem St. Go north on Nehalem.
0.3	0.3	Intersection of 5th St. Turn left.
2.9	3.2	Intersection unmarked. Turn left.
0.3	3.5	Intersection Ritter Rd. Turn left.
0.8	4.3	Downtown Quincy. Go straight.
1.0	5.3	Quincy fire station. Go straight.
0.3	5.6	Intersection unmarked. Turn left. This is same point on above road log at mile 12.9.

rlk, 2-17-2000