**Section 604.1440 Sanitary Separation for Finished Water Mains**

Water mains must be protected from sanitary sewers, storm sewers, combined sewers, house sewer service connections and drains as follows:

a) Horizontal Separation

1) Water mains must be laid at least 10 feet horizontally from any existing or proposed drain, storm sewer, sanitary sewer, combined sewer or sewer service connection. The distance must be measured edge to edge.

2) Water mains may be laid closer than 10 feet to a sewer line when:

A) local conditions prevent a lateral separation of 10 feet;

B) the water main invert is at least 18 inches above the crown of the sewer; and

C) the water main is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer.

3) When it is impossible to meet subsection (a)(1) or (a)(2), the following requirements must be met:

A) Required Materials

i) Both the water main and drain or sewer must be constructed of materials specified in Section 604.1410; or

ii) The sewer has a structural lining meeting ASTM F1216. The Agency may approve an alternate structural lining under Section 604.145(b).

B) The drain or sewer must be pressure tested to the maximum expected surcharge head before backfilling.

4) Water mains must be laid at least 25 feet horizontally from any existing or proposed sanitary lift station, unless otherwise approved by the Agency under Section 604.145(b).

b) Vertical Separation

1) When possible, the water main must be placed above the sewer.

A) A water main must be laid so that its invert is 18 inches above the crown of the drain or sewer whenever water mains cross storm sewers, sanitary sewers, or sewer service connections.

B) The vertical separation must be maintained for that portion of the water main located within 10 feet horizontally of the outer edge of any sewer or drain crossed.

C) A length of water main pipe must be centered over the sewer to be crossed with joints equidistant from the sewer or drain.

D) When it is impossible to maintain the 18-inch separation specified in subsection (b)(1)(A), the Agency may approve an alternate construction method that reduces the risk of sanitary contamination, including:

i) Both the water main and sewer are constructed of water main materials specified in Section 604.1410, extending on each side of the crossing until at least 10 feet separates the two pipes;

ii) The sewer has a structural lining meeting ASTM F1216 or an alternate structural lining approved by the Agency under Section 604.145(b);

iii) The water main or the sewer is encased in a carrier pipe equivalent to water main materials specified in Section 604.1410, extending on each side of the crossing until at least 10 feet separate the two pipes; or

iv) When the water main crosses a storm sewer, the storm sewer is constructed with reinforced concrete pipe conforming to ASTM C76 with ASTM C443 flat gasket joints or ASTM C361 "O-ring" joints within 10 feet of the water main.

2) When it is impossible to place the water main above the storm sewers, sanitary sewers or sewer service connections, the water main may be placed below the sewer if:

A) The water main is laid so that it is at least 18 inches below the invert of the drain or sewer wherever water mains cross storm sewers, sanitary sewers or sewer service connections.

B) Construction

i) Both the water main and sewer are constructed of water main materials specified in Section 604.1410, extending on each side of the crossing until at least 10 feet separates the two pipes;

ii) The sewer has a structural lining meeting ASTM F1216 or an alternate structural lining approved by the Agency under Section 604.145(b);

iii) The water main or the sewer is encased in a carrier pipe equivalent to water main materials specified in Section 604.1410, extending on each side of the crossing until at least 10 feet separate the two pipes; or

iv) when the water main crosses a storm sewer, the storm sewer is constructed with reinforced concrete pipe conforming to ASTM C76 with ASTM C443 flat gasket joints or ASTM C361 "O-ring" joints within 10 feet of the water main.

C) The sewer or drain lines must be supported to prevent settling and breaking the water main.

c) Water mains must be separated from sewage disposal systems, disposal fields and seepage beds by a minimum of 25 feet.

d) Notwithstanding subsection (a) or (b), a sanitary sewer force main must have at least the following minimum separation:

1) When the sanitary sewer force main and the water main are parallel, a 10-foot horizontal separation from water mains; and

2) When the sanitary sewer force main and the water main cross, an 18-inch vertical separation, with the water main above the sanitary sewer force main.