CLAIMS

1. A stormwater treatment device, comprising:

a housing having a floor and a wall;

an inlet formed in the wall that receives stormwater including suspended sediment into an inlet chamber of the housing, the inlet chamber defined by a first portion of the wall and a front baffle, the front baffle extending vertically from the floor of the housing;

an outlet formed in the wall that discharges the stormwater from an outlet chamber of the housing, the outlet chamber defined by a rear baffle, a second portion of the wall, and a short circuit prevention plate;

a treatment chamber and settlement storage area defined by the front baffle, a third portion of the wall, the rear baffle, and the short circuit prevention plate and having a crossflow settling device disposed therein, the crossflow settling device having a treatment channel defined by the front baffle, the rear baffle, and a first pair of angled plates disposed on a first side of a centerline of the housing, and a second pair of angled plates disposed on a second side of the centerline, the first pair of angled plates and the second pair of angled plates diverging at an angle, the first pair of angled plates and the second pair of angled plates disposed between the front baffle and the rear baffle, the front baffle having a treatment channel opening and the rear baffle having a treatment channel outlet; and

a bypass channel comprising an inlet weir, an outlet weir, and a pair of bypass channel walls, wherein an elevation of a top of the inlet weir is the same as the elevation of the outlet weir between the bypass channel walls but below an elevation of the top of the outlet weir, outside the bypass channel, and an elevation of the bypass channel walls, wherein the bypass channel

receives a flow over the inlet weir when a flow exceeds a limit, thereby bypassing the treatment chamber and settlement storage area;

wherein, under normal flow, the stormwater flows into the inlet and into the inlet chamber, into the treatment channel via the treatment channel opening, into the outlet chamber via the treatment channel outlet, wherein the stormwater flows in a crossflow pattern causing the sediment to fall out of suspension, and out of the crossflow settling device through openings at a bottom of the pairs of angled plates.

2. The stormwater treatment device of claim 1, wherein under high flow, the stormwater flows over the inlet weir and either into the bypass channel and over a notch in the outlet weir and into the outlet chamber, and out of the housing via the outlet or into a floatables retention zone between the bypass channel walls and a third portion of the wall.

3. The stormwater treatment device of claim 2, wherein under a very high flow, floatables overflow the outlet weir and the pair of bypass walls into the outlet chamber.

4. The stormwater treatment device of claim 1, wherein the first pair of angled plates and the second pair of angled plates are provided at an angle of about 45/135 degrees and about 65/115 degrees relative to the horizontal.

5. The stormwater treatment device of claim 1, wherein a width of each individual angled plate of the first pair of angled plates or the second pair of angled plates is less than a length of the individual angled plates.

6. The stormwater treatment device of claim 1, wherein a spacing between the first pair of angled plates or the second pair of angled plates is between 1 and 4 inches.

7. The stormwater treatment device of claim 1, further comprising:

a flow diverter, wherein the flow diverter is positioned in the inlet chamber and directs the stormwater into the treatment channel.

8. A method for removing suspended sediment from stormwater, comprising:

receiving, at an inlet in a wall of a stormwater treatment device having a housing with a floor and a wall, the stormwater comprising the suspended sediment, wherein the stormwater flows into an inlet chamber defined by a first portion of the wall and a front baffle, the front baffle extending vertically from the floor of the housing;

receiving, in a treatment chamber defined by a front baffle, a second portion of the wall, a rear baffle, and a bypass prevention plate and having a crossflow settling device disposed therein, the stormwater comprising the suspended sediment;

receiving, by the crossflow settling device having a treatment channel defined by the front baffle, the rear baffle, and a first pair of angled plates disposed on a first side of a centerline of the housing, and a second pair of angled plates disposed on a second side of the centerline, the first pair of angled plates and the second pair of angled plates diverging at an angle, the first pair of angled plates and the second pair of angled plates disposed between the front baffle and the rear baffle, the front baffle having a treatment channel opening and the rear baffle having a treatment channel outlet, the stormwater comprising the suspended sediment;

causing, by the crossflow settling device and under normal flow rates, the stormwater to flow in a crossflow pattern that causes the suspended sediment to fall out of suspension and out of the crossflow settling device through openings at a bottom of the pairs of angled plates;

receiving, in an outlet chamber defined by the rear baffle, a second portion of the wall, and a short circuit prevention plate, the stormwater with a portion of the suspended sediment removed;

receiving, under high flow, the stormwater with the suspended sediment into a bypass channel, the bypass channel comprising an inlet weir, an outlet weir, and a pair of bypass channel walls, wherein an elevation of a top of the inlet weir is the same as an elevation of the top of a notch in the outlet weir and below an elevation of a top of the outlet weir and tops of the bypass channel walls, wherein the bypass channel receives a flow over the inlet weir when a flow exceeds a limit, thereby bypassing the treatment chamber and settlement storage area, wherein the stormwater with the suspended sediment flows over an inlet weir and into the bypass channel and over a notch in the outlet weir and into the outlet chamber; and

discharging, by an outlet in a third portion of the wall, the stormwater with the suspended sediment removed.

9. The method of claim 8, wherein under high flow, some of the stormwater flows over the inlet weir and into a floatables retention zone between the bypass channel walls and a third portion of the wall.

10. The method of claim 9, wherein the floatables are retained in the floatables retention zone.

11. The method of claim 10, wherein under a very high flow, floatables overflow a notch in the outlet weir and the pair of bypass walls into the outlet chamber.

12. The method of claim 9, wherein the first pair of angled plates and the second pair of angled plates are provided at an angle of about 45/135 degrees and about 65/115 degrees relative to the horizontal.

13. The method of claim 9, wherein a width of each individual angled plate of the first pair of angled plates or the second pair of angled plates is less than a length of the plates.

14. The method of claim 9, wherein a spacing between the first pair of angled plates or the second pair of angled plates is between about 1 inch and 4 inches.

15. The method of claim 8, wherein the stormwater is directed into the treatment channel by a flow diverter.

16. The stormwater treatment device of claim 1, wherein the first pair of angled plates and the second pair of angled plates diverge at the angle of between about 50 degrees and about 90 degrees.

17. The method of claim 8, wherein the first pair of angled plates and the second pair of angled plates diverge at the angle of between about 50 degrees and about 90 degrees.