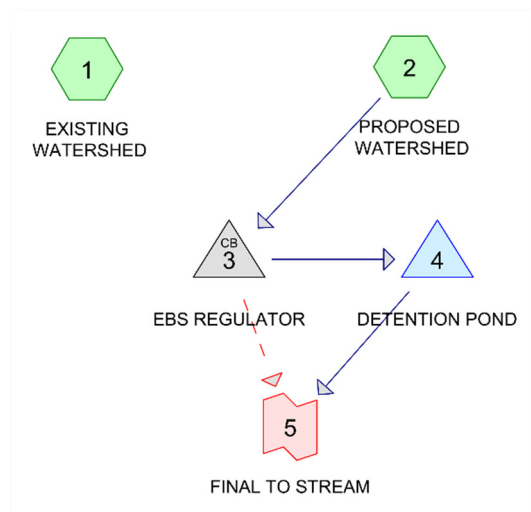
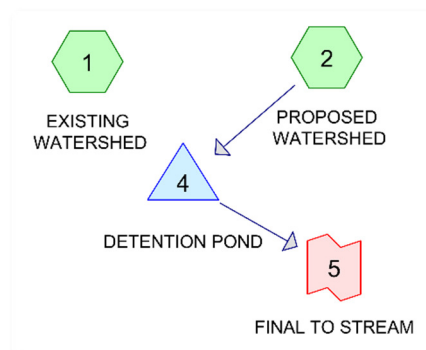


CASE STUDY: EBS REGULATOR USED FOR THE 4 ACRE SITE DEVELOPMENT

GIVEN: A new development is proposed on 4 acres. The current runoff curve number is 70 and the development will raise the curve number to 85. The time of concentration in both cases is 15 minutes and the pond is a vault having an area of 5,000 square feet.

CONVENTIONAL METHOD: We create a hydrologic model to compute the new storm water runoffs for 6 storms; the 2, 5, 10, 25, 50 and 100 year frequencies. Next, we insert a detention basin into our model to reduce the peak flow. We run the model and do our best to optimize the outlets to minimize the stormwater detention volume.



EBS REGULATOR: For the exact same base conditions as above, we now insert the **EBS Regulator** into the hydrologic model and compute the resulting peak flows and peak stormwater volume for each storm frequency.

Finally, we compare the storage volumes needed to reduce the proposed watershed flows to the existing peak flows. The summary of these comparisons are shown on the chart below for each storm frequency.

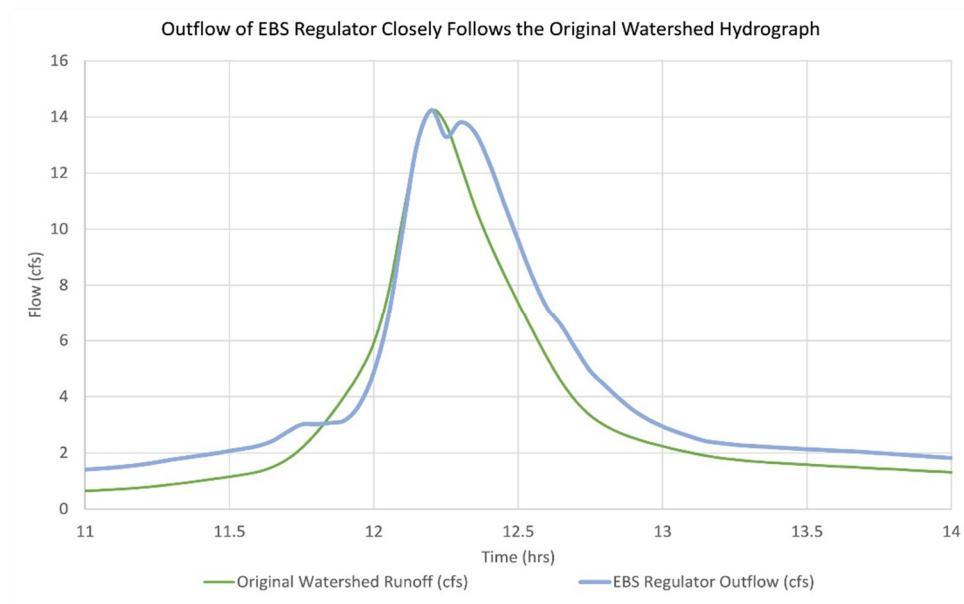
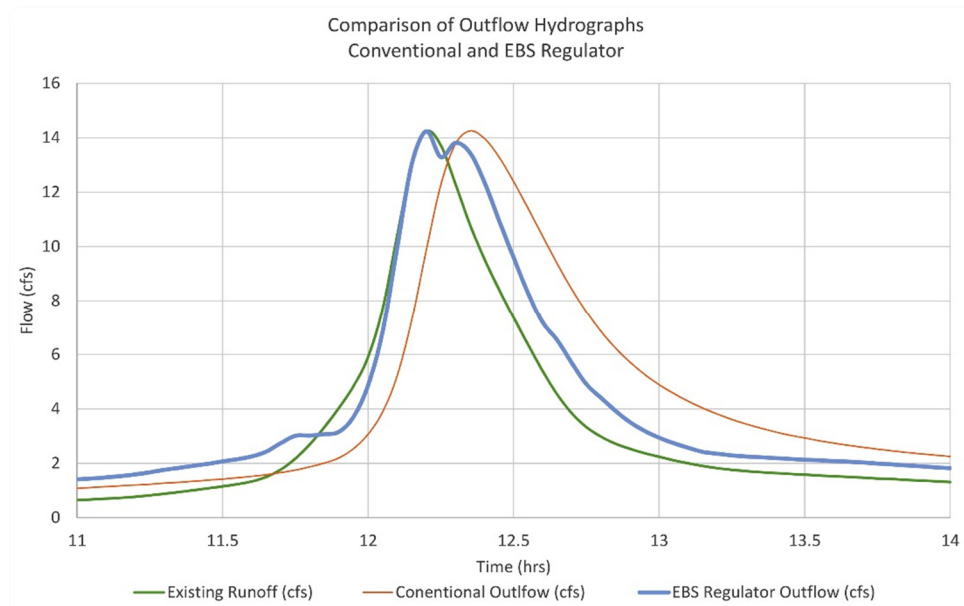
Comparison Table of Model Results:

Storm	Existing Peak Flow	Conventional Peak Outflow	Conventional Storage Volume	EBS REGULATOR Peak Outflow	EBS REGULATOR Storage Volume	Storage Volume Reduction
(year)	(cfs)	(cfs)	(cf)	(cfs)	(cf)	(per cent)
100	14.27	14.25	17,786	14.24	8,625	48%
50	12.77	12.67	16,944	12.75	8,577	51%
25	9.84	9.56	15,060	9.82	8,454	56%
10	7.04	6.70	12,882	7.02	8,033	62%
5	5.71	5.39	11,647	5.67	7,327	63%
2	3.24	3.14	8,761	3.21	4,158	47%

Note that the EBS Regulator is incredibly effective at reducing the required detention storage volume. The reduction in volumes ranges from 47% to 63% less as compared to the best conventionally designed system.

BENEFITS OF THE EBS REGULATOR

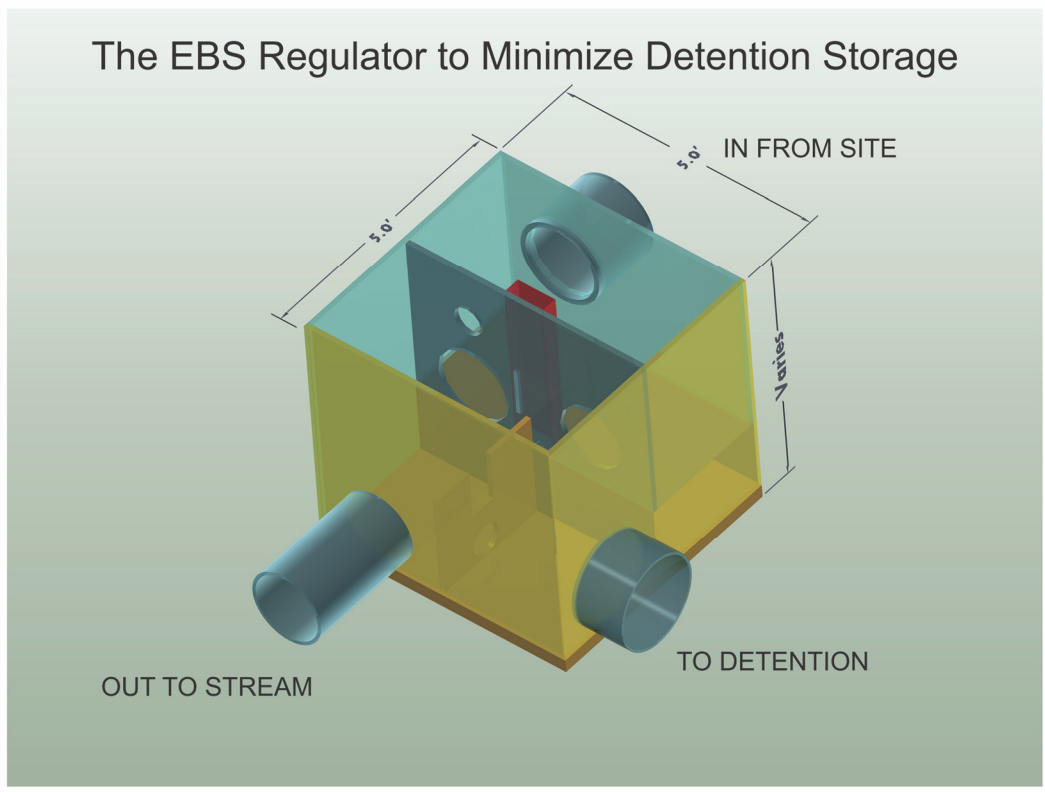
Figure: 100 Year Storm – Outflow Comparison of Conventional and EBS Regulator:



Note: Since the EBS Regulator outflow closely matches the existing watershed runoff shape there is less chance of downstream impacts. The peak time of the EBS Regulator outflow is near the peak outflow of the watershed but the time of peak outflow of the conventional system has been shifted to a later time.

Importantly, by using the EBS Regulator one would use the minimum amount of land and material. This can translate to a friendlier, less impactful development project and, of course, less cost.

TECHNICAL INFORMATION ABOUT THE EBS REGULATOR:



The EBS Regulator is a flow management device comprising a constant flow element and other built-in flow controllers that convey water to a detention basin according to a custom schedule designed for that project. There are no moving parts in this system.

Flow from the site enters the device and is metered out to both the detention basin and the outlet such that all storms are controlled to the targeted peak flow.

We provide variety of standard modules – and, since no two projects are ever quite the same, we offer consultation for custom EBS Regulator modules.

The computations in this report were prepared using Hydrocad software though any hydrologic software can be used. EBS Systems, Inc. will provide the design Engineer with the EBS Regulator rating curves that can be entered into most software packages.

OPERATION OF THE EBS REGULATOR

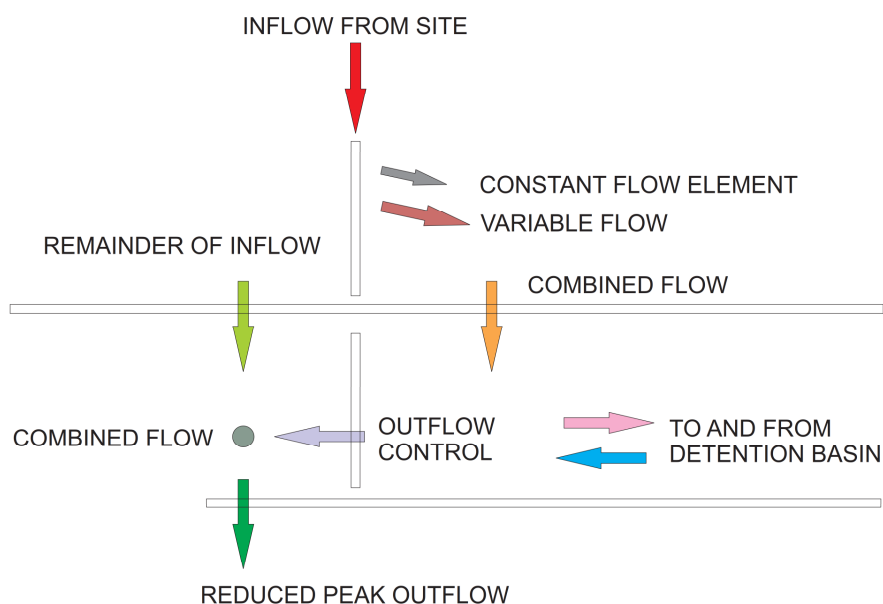
The stormwater flow from the site is split into two different routes;

- To the right the flow is further split into; a constant flow element and a varying flow that are then combined. The combined flow then enters the standard detention basin. The flow out of the detention basin is limited by the outflow control panel.
- The portion of flow to the left is the remaining flow and it is combined with the outflow of the detention basin in a separate chamber of the EBS Regulator.

The resulting flow is then released to the stream or storm system. In this process, the peak flows are reduced and the storage in the detention basin is highly reduced compared to a conventional detention system, since only a portion of the flow from the site enters the detention basin.

This apportionment is the main basis that accounts for the smaller storage volume used by the EBS system. This ensure that the EBS system will have little or no impact downstream.

The EBS Regulator allows only the minimal amount of flow into the detention basin and only the amount that is needed to reduce the peak flows – nothing more.



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