

Flexible Treatment Options: How the calculator can help

January 20, 2012
MIDS Work Group Meeting

Purpose

- Walk through example with beta calculator to help group decide what, if any, MIDS performance goal should be adopted for sites with restrictions, specifically sites with slow-draining soils
 - Show that several BMPs are needed at sites with slow-draining soils to provide equivalent TP and TSS removal as sites without restrictions

Presentation Outline

- Remind everybody of the “big question” and some performance goal options
- Show performance of BMPs on an example site
- Demonstrate example with beta calculator
- Summarize results
- Lead into discussion of draft performance goal

Big Question:

Only non-infiltration, volume control BMPs and BMPs that manage dissolved phosphorus can achieve similar treatment results on sites with restrictions.

Is requiring these BMPs prudent and feasible?

Yes

- Performance goal for sites with restrictions:
“provide equivalent TP removal”

No

- How much treatment is enough?

Discussion Options (non-inclusive)

- Filter same volume as non-restricted site
- Provide some other lower performance standard
- Match TSS removal (~90%) of non-restricted site
- Match TP removal (~90%) of non-restricted site

Discussion Options (non-inclusive)

- Install BMPs that will cost the same as non-restricted site or have cost cap
- Express restricted site performance goal as “inches off imperviousness” rather than “% removal”

One Example

10 acre site, 50% Imperviousness

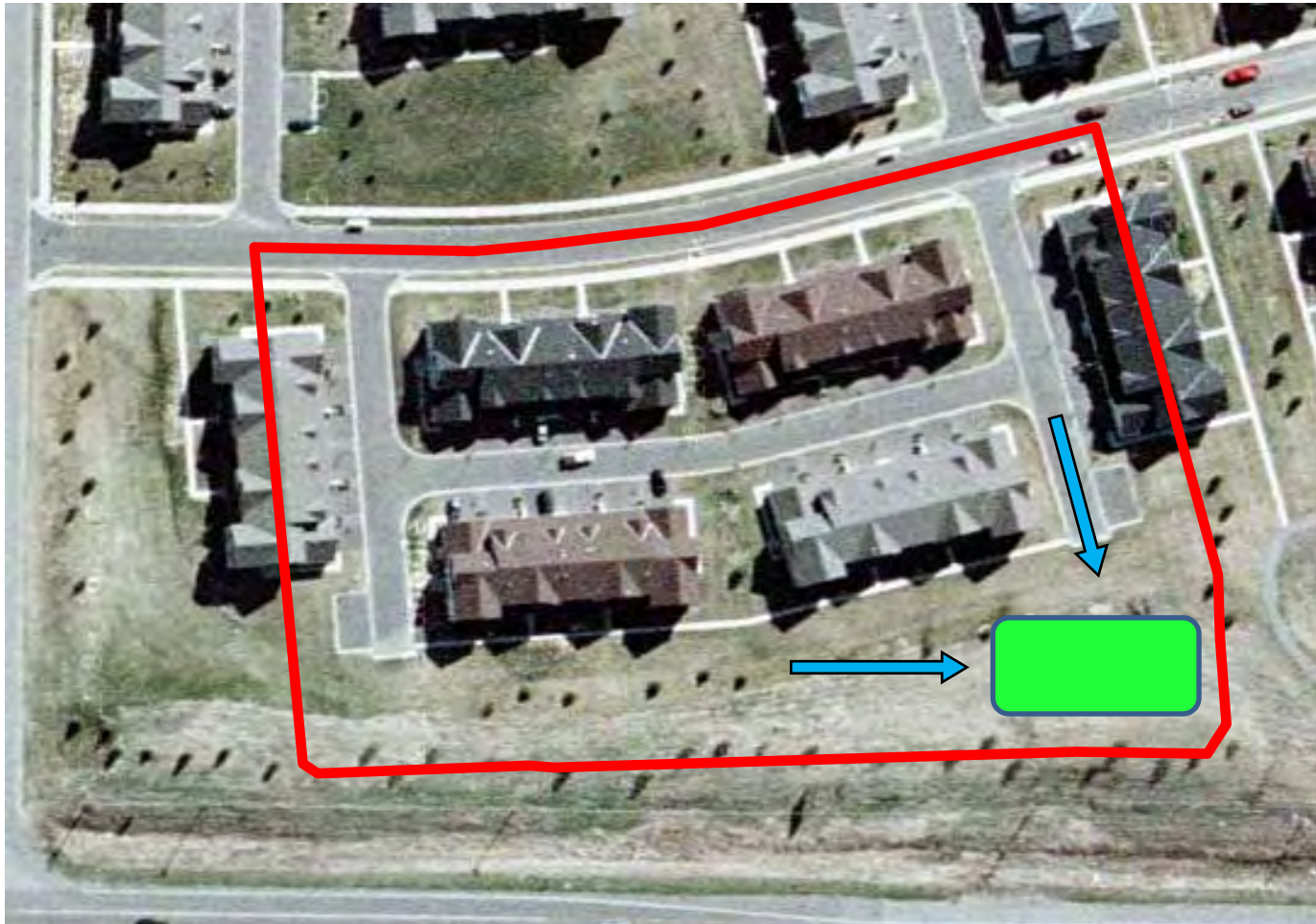
Site with B soils: Volume Control BMP

- Bioretention basin

Site with D Soils: Clay Site BMPs

1. Pond
2. Biofiltration basin
3. Grass swale with soil amendments to biofiltration basin
4. Grass swale with soil amendments to pond to biofiltration basin
5. Grass swale with soil amendments to pond to sand filter to biofiltration basin

Volume Control Site: B Soil, 10-Acre Site 50% Impervious



One Example

10 acre site, 50% Imperviousness

Site with B soils: Volume Control BMP

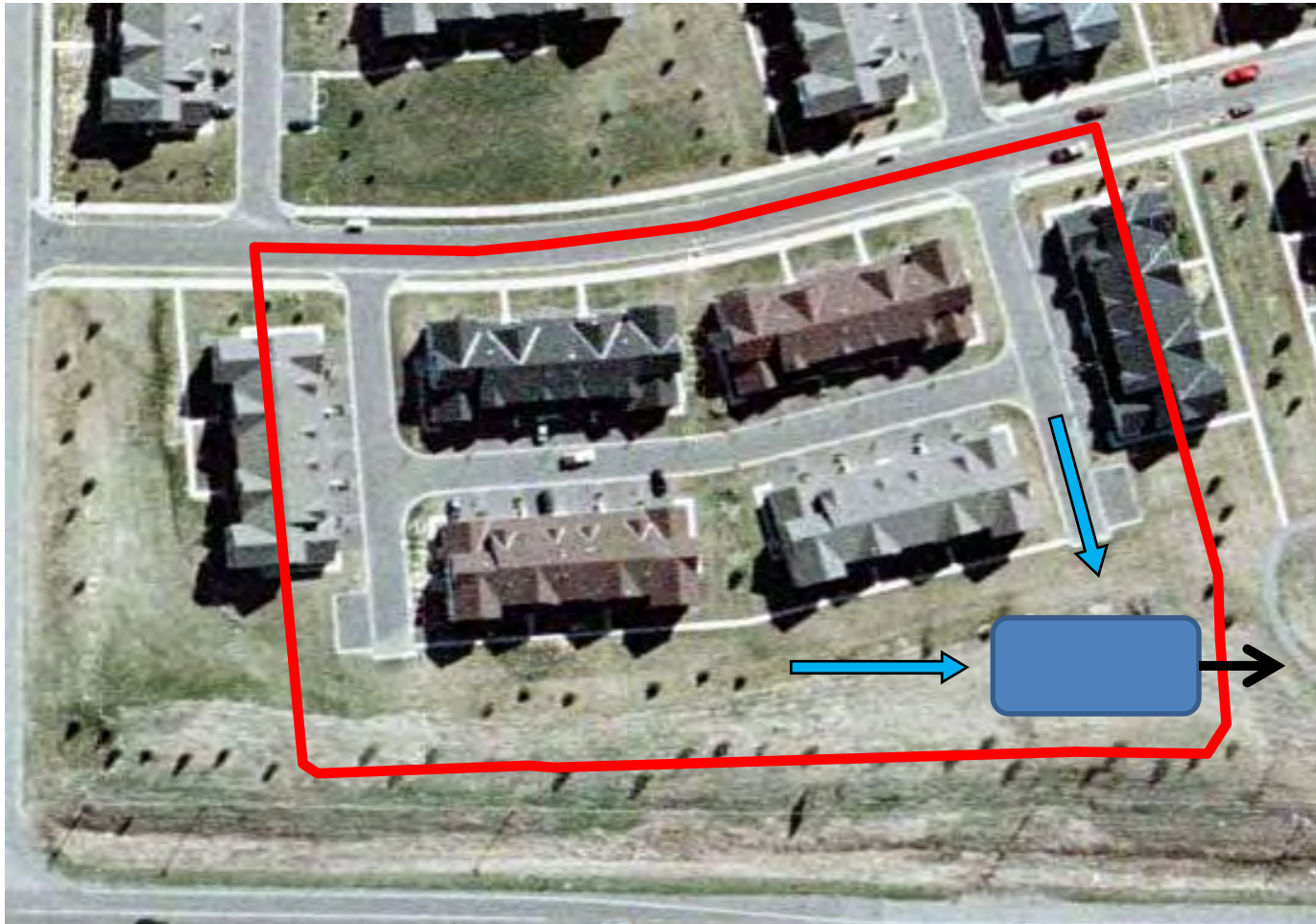
- Bioretention basin
(89% TP, 89% TSS)

Site with D Soils: Clay Site BMPs

1. Pond
2. Biofiltration basin
3. Grass swale with soil amendments to biofiltration basin
4. Grass swale with soil amendments to pond to biofiltration basin
5. Grass swale with soil amendments to pond to sand filter to biofiltration basin

Clay Soil Site No. 1:

BMP = Pond (Dead Storage Volume =
Runoff from 2.5" Event)



One Example

10 acre site, 50% Imperviousness

Site with B soils: Volume Control BMP

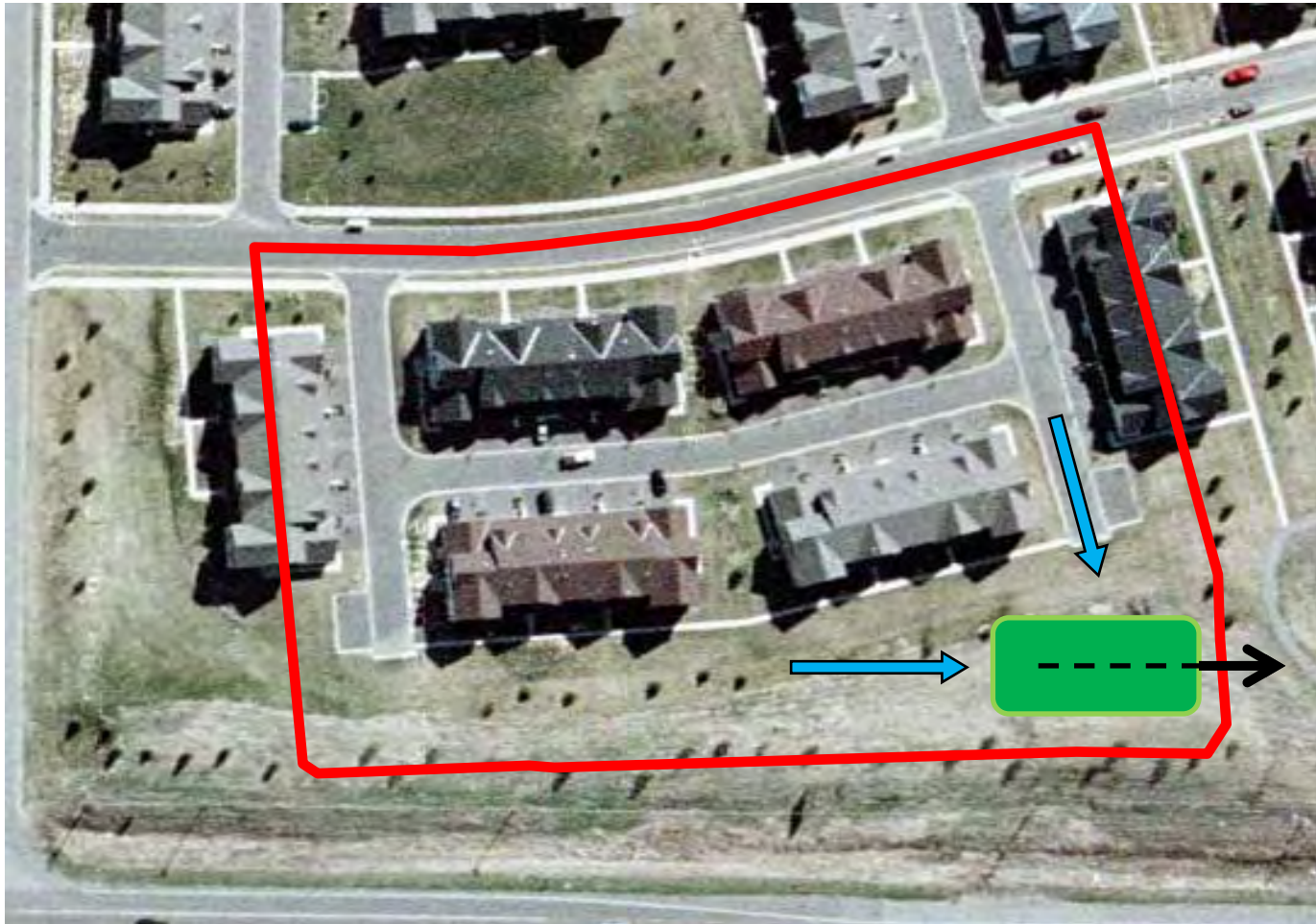
- Bioretention basin
(89% TP, 89% TSS)

Site with D Soils: Clay Site BMPs

1. Pond (50% TP, 84% TSS)
2. Biofiltration basin
3. Grass swale with soil amendments to biofiltration basin
4. Grass swale with soil amendments to pond to biofiltration basin
5. Grass swale with soil amendments to pond to sand filter to biofiltration basin

Clay Soil Site No. 2:

BMP = Biofiltration Basin



One Example

10 acre site, 50% Imperviousness

Site with B soils: Volume Control BMP

- Bioretention basin
(89% TP, 89% TSS)

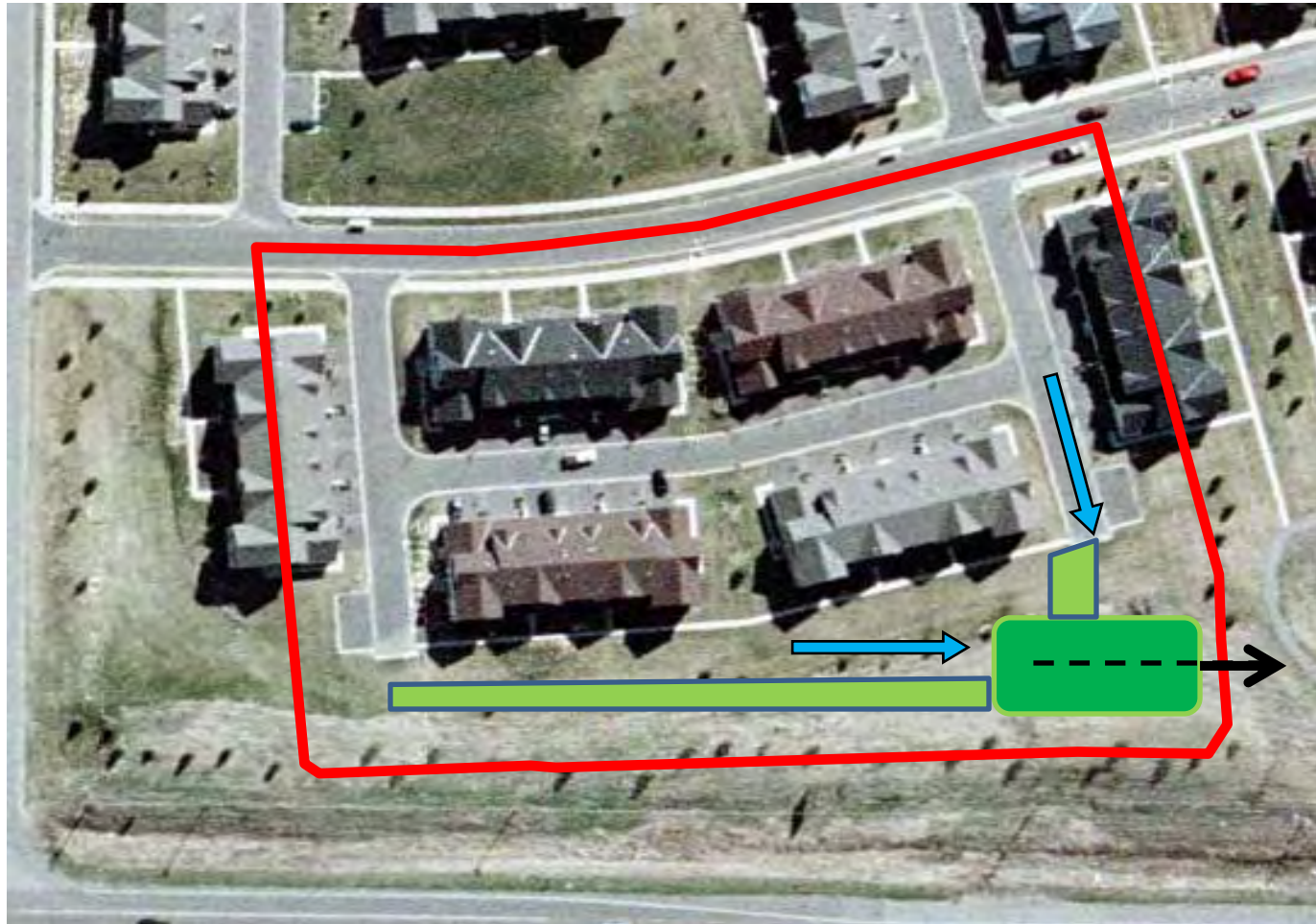
Site with D Soils: Clay Site BMPs

1. Pond (50% TP, 84% TSS)
2. Biofiltration basin (50% TP, 85% TSS)
3. Grass swale with soil amendments to biofiltration basin
4. Grass swale with soil amendments to pond to biofiltration basin
5. Grass swale with soil amendments to pond to sand filter to biofiltration basin

Clay Soil Site No. 3:

BMP = Grassed Swale with Amended Soils to
Biofiltration Basin

BARR



One Example

10 acre site, 50% Imperviousness

Site with B soils: Volume Control BMP

- Bioretention basin
(89% TP, 89% TSS)

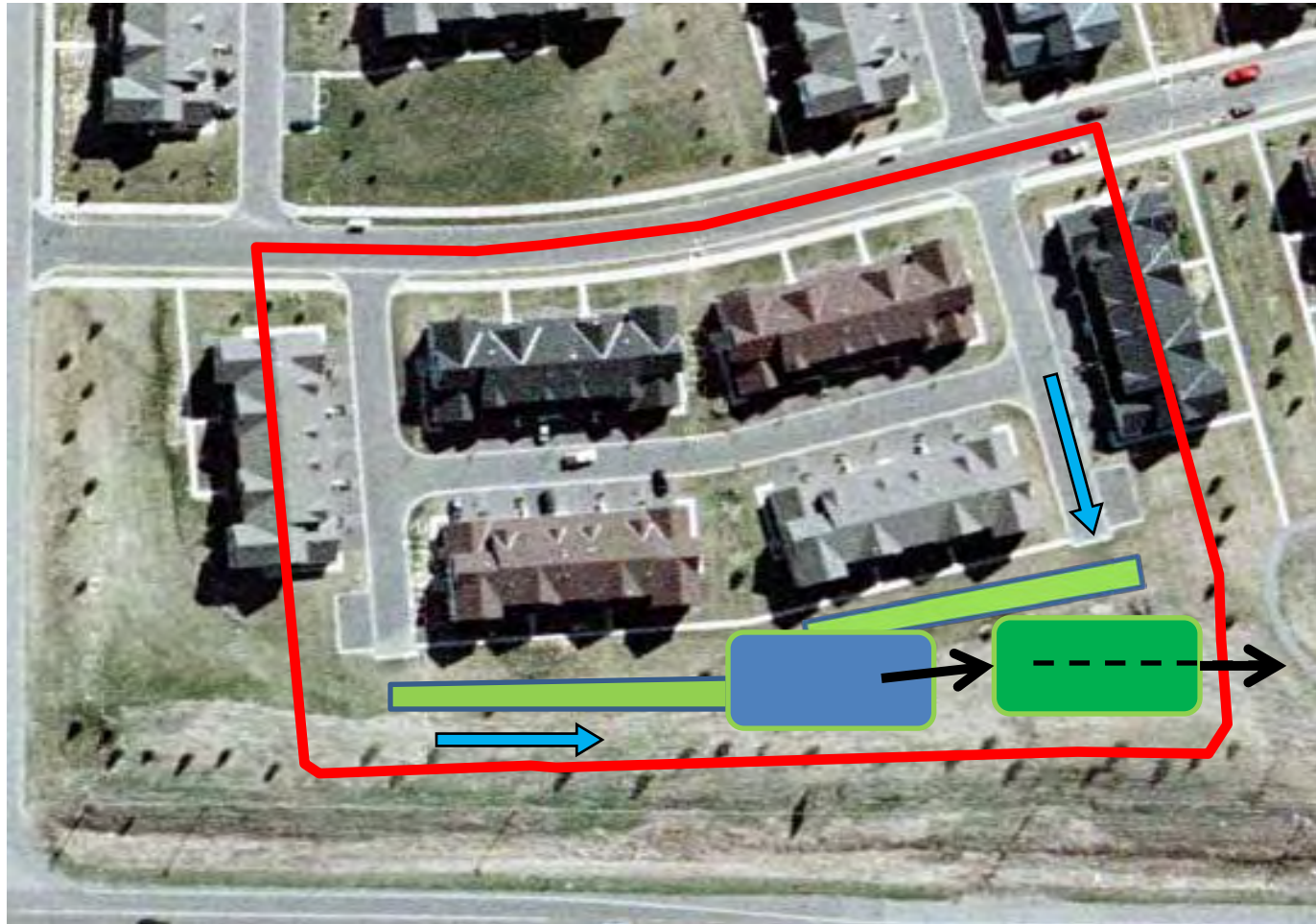
Site with D Soils: Clay Site BMPs

1. Pond (50% TP, 84% TSS)
2. Biofiltration basin (50% TP, 84% TSS)
3. Grass swale with soil amendments to biofiltration basin (66% TP, 96% TSS)
4. Grass swale with soil amendments to pond to biofiltration basin
5. Grass swale with soil amendments to pond to sand filter to biofiltration basin

Clay Soil Site No. 4:

BMP = Grassed Swale with Amended Soils to
Pond to Biofiltration Basin

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One Example

10 acre site, 50% Imperviousness

Site with B soils: Volume Control BMP

- Bioretention basin
(89% TP, 89% TSS)

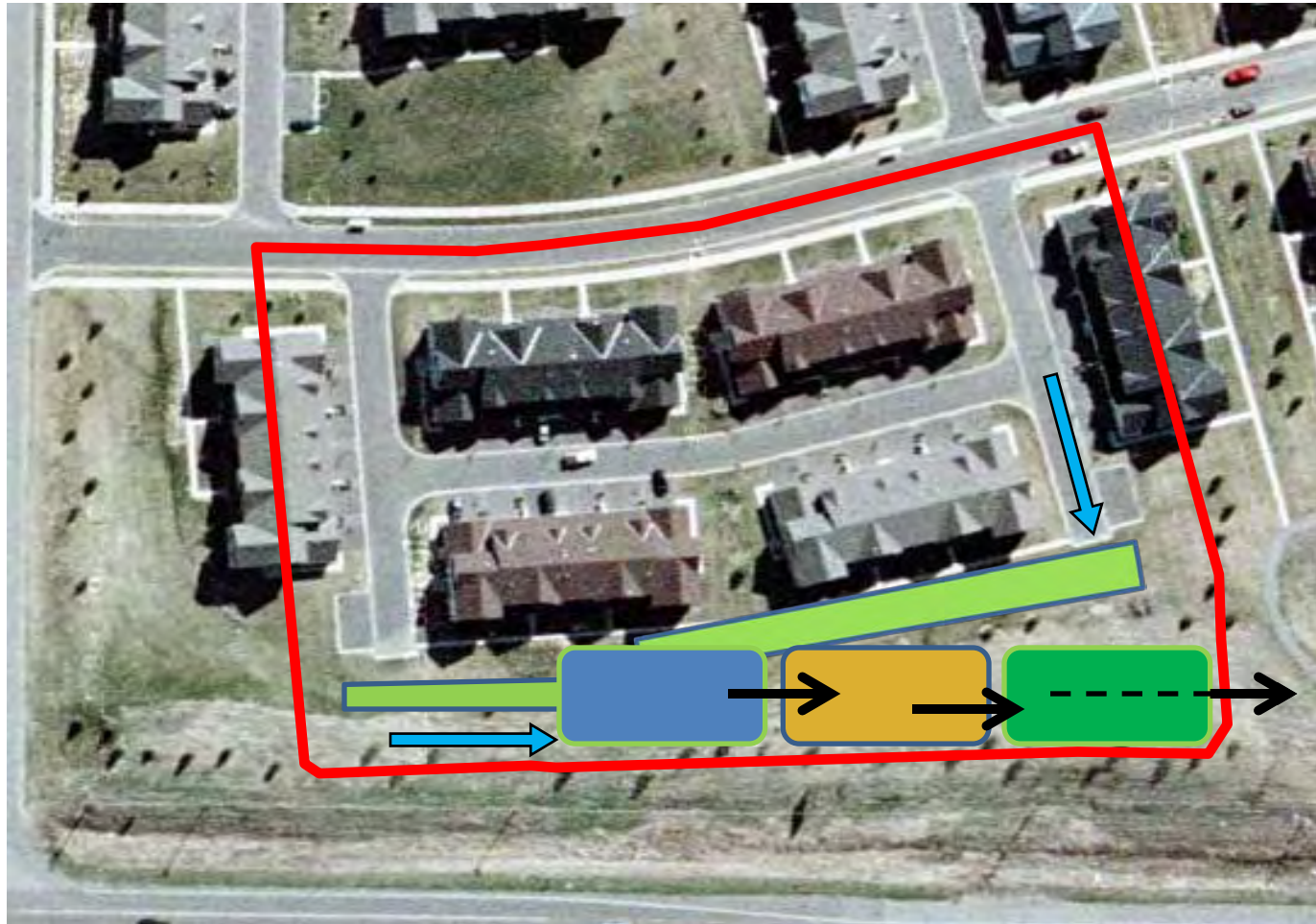
Site with D Soils: Clay Site BMPs

1. Pond (50% TP, 84% TSS)
2. Biofiltration basin (50% TP, 84% TSS)
3. Grass swale with soil amendments to biofiltration basin (66% TP, 96% TSS)
4. Grass swale with soil amendments to pond to biofiltration basin (83% TP, 99% TSS)
5. Grass swale with soil amendments to pond to sand filter to biofiltration basin

Clay Soil Site No. 5:

BMP = Grassed Swale with Amended Soils to
Pond to Sand Filter to Biofiltration Basin

BARR



Comparison of Results from Current Beta Version MIDS Calculator



Site Soils	BMP(s)	TP % Reduction	TSS % Reduction
B	Bioretention	89	89
D	Pond	50	84
	Biofiltration	50	85
	1) Grass swale with amended soils, 2) Biofiltration	66	96
	1) Grass swale with amended soils, 2) Pond, 3) Biofiltration	83	99
	1) Grass swale with amended soils, 2) Pond, 3) Sand filter, 4) Biofiltration	91	100

Calculator Demonstration

Comparison of Results from Current Beta Version MIDS Calculator



Site Soils	BMP(s)	TP % Reduction	TSS % Reduction
B	Bioretention	89	89
D	Pond	50	84
	Biofiltration	50	85
	1) Grass swale with amended soils, 2) Biofiltration	66	96
	1) Grass swale with amended soils, 2) Pond, 3) Biofiltration	83	99
	1) Grass swale with amended soils, 2) Pond, 3) Sand filter, 4) Biofiltration	91	100

Summary

- Achieving equivalent TP % reduction is **feasible** (amounts given by calculator will likely be revised, based on feedback from BMP groups and to address/track dissolved phosphorus performance of BMPs)
- Is it prudent?



Framing Flexible Treatment Options: Antidegradation Definition of “Prudent” Alternatives*

“Prudent” (in context of antidegradation alternatives analysis):

- Selected with care and sound judgment
- Does not have unusual or extraordinary economic, social, or environmental costs

Framing Flexible Treatment Options: Antidegradation Definition of “Feasible” Alternatives*

“Feasible” (in context of antidegradation alternatives analysis):

- Capable of being done with existing technology;
- In accordance with acceptable engineering standards;
- Consistent with reasonable public health, safety, and welfare requirements;
- Legally possible; and
- Has supportive governance that can be successfully put into practice to accomplish the task.