

Modeling Alternatives: Phasing to a Collection System in Port Ridglea East

Tim Osting, P.E.
Espey Consultants, Inc.

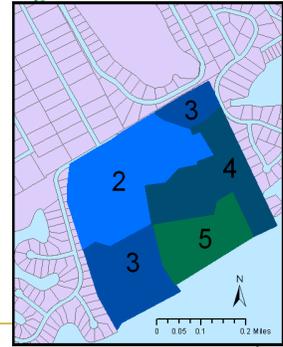
January 22, 2009

Espey Consultants, Inc.
3809 S. 2nd Street, B-300
Austin, TX 78753
512.326.5659



Port Ridglea East Collection System Phasing Plan

- Phase 1
 - Existing Conditions
- Phase 2
 - 48 lots north side
- Phase 3
 - add 63 lots SW and NE
- Phase 4
 - add 54 lots East and Central
- Phase 5
 - add 52 lots South-central



Application of Two Modeling Approaches

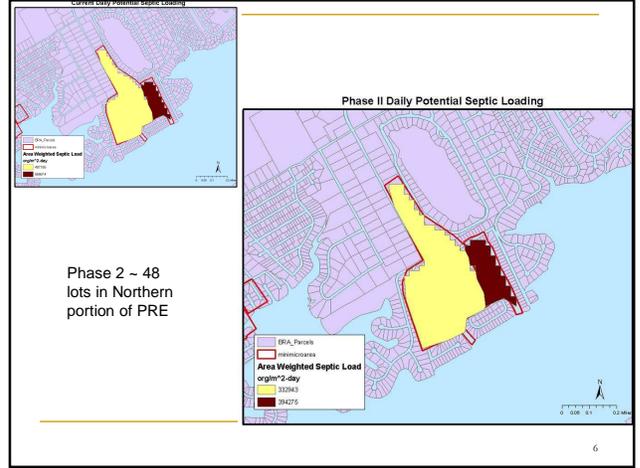
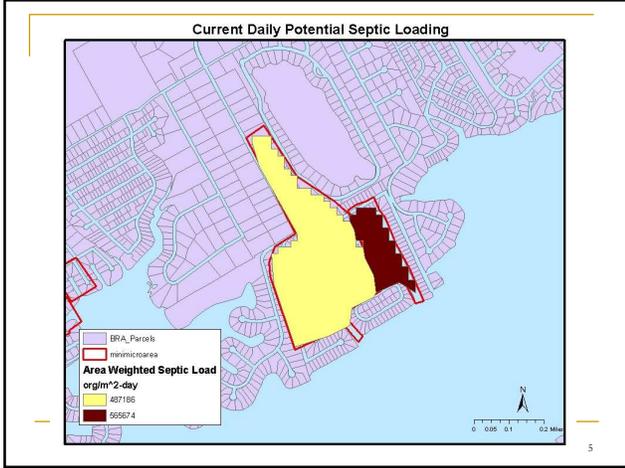
- Watershed Modeling
 - Net reduction in potential loading from septic available for runoff
 - Number of Homes = % Reduction of Septic Load
 - Reduction compared to All Potential Sources
- Lake/Cove Modeling
 - Effect of Location of Direct Discharges

3

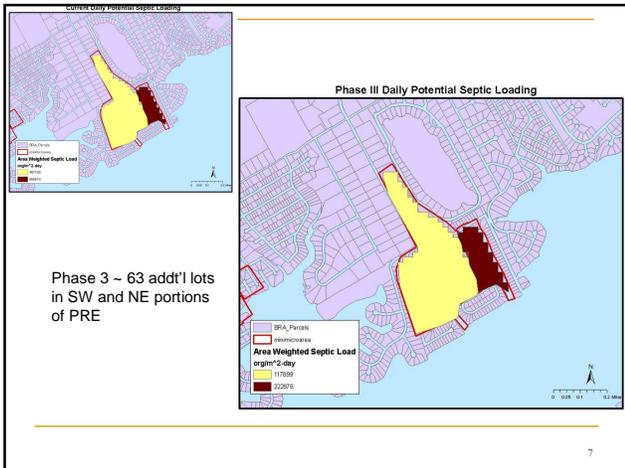
Watershed Modeling

- Review
 - Large-area watersheds and Microwatersheds
 - Multiple potential sources: deer, feral hog, cattle, pet, **septic**, waste water treatment plants
- BMP Scenario: Reduce the number of systems on de-centralized on-site sewage facilities (i.e. septic and other OWTS)
 - Reduce the magnitude of bacteria available for run-off into canals
 - Micro-watershed basis for PRE
 - Western Canal
 - Eastern Canal

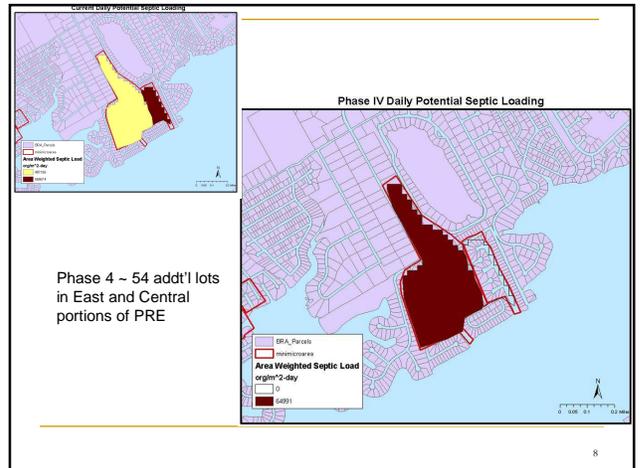
4



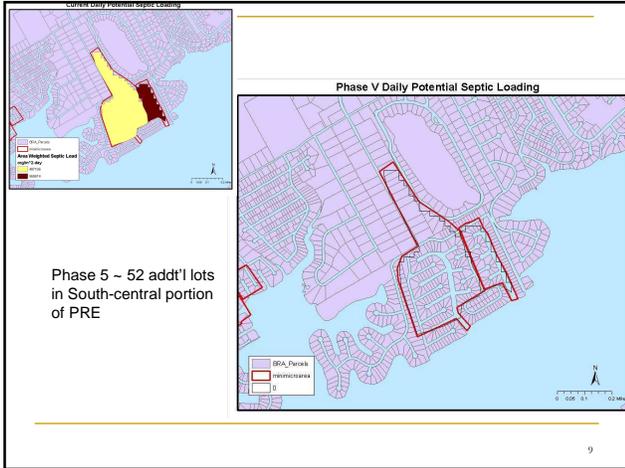
Phase 2 ~ 48 lots in Northern portion of PRE



Phase 3 ~ 63 add'l lots in SW and NE portions of PRE



Phase 4 ~ 54 add'l lots in East and Central portions of PRE



Watershed Modeling Summary

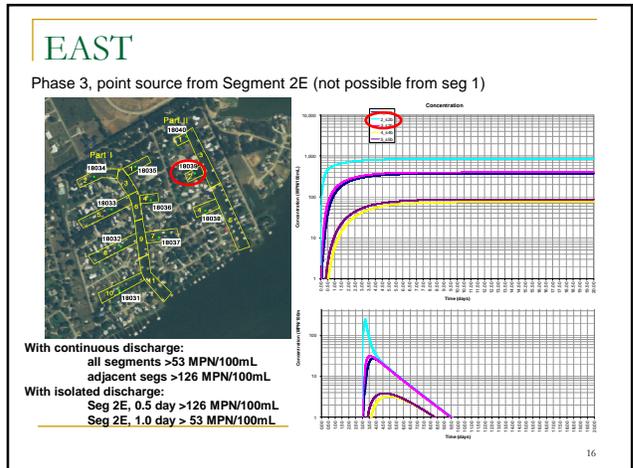
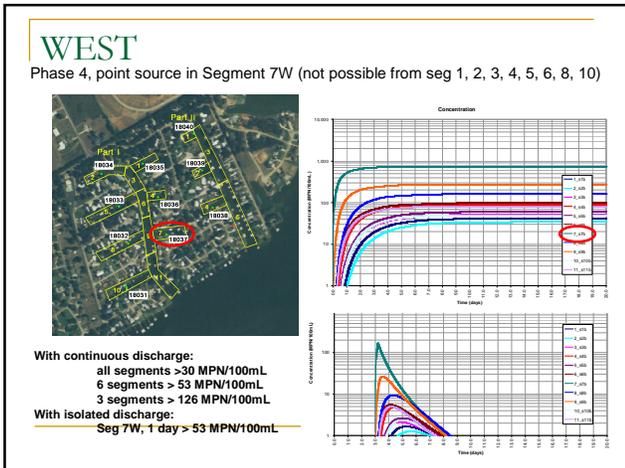
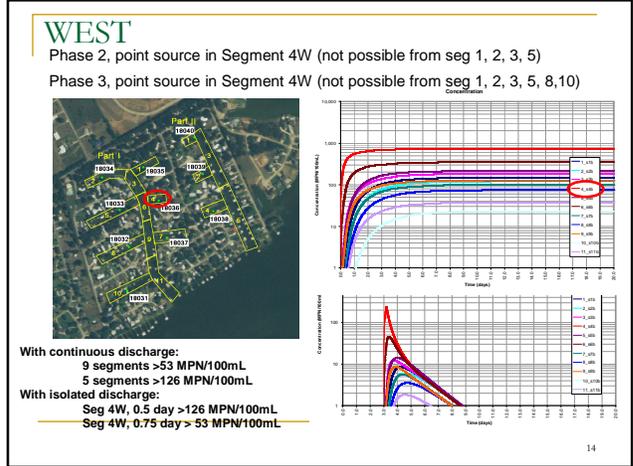
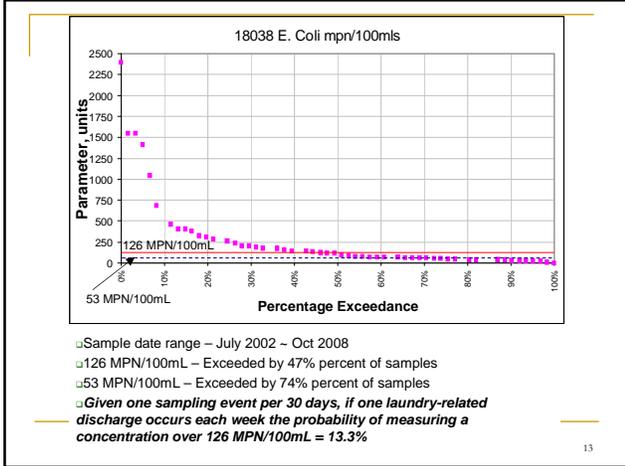
- After Phase 5, the potential bacteria loading from OWTS (septics) is significantly reduced.
- The increased discharge to the WWTP is not anticipated to require new permitting.
- Loading from other sources (pets) will remain, but since OWTSS probably contribute the largest amount of E. coli in the PRE canals the level of contamination will be lowered significantly.

Microwatershed	Current Daily Load (org/in ²)	Phase 2 Daily Load (org/in ²)	Phase 3 Daily Load (org/in ²)	Phase 4 Daily Load (org/in ²)	Phase 5 Daily Load (org/in ²)
PRE_E	565,674	394,275	222,876	0	0
PRE_W	487,186	332,943	117,899	64,991	0
Entire PRE	1,052,860	727,218	340,775	64,991	0
Total Ld PRE	1,079,856	754,214	367,771	91,987	26,996
%Reduction		30%	66%	92%	97.5%

Lake/Cove Modeling

- Review
 - 4 scenarios evaluated: non-point, lake source, continuous point source, intermittent point source
- BMP Scenario: Evaluate location of point discharges
 - Phases of collection systems eliminate the possibility of direct discharging (septic) from certain segments
 - Load reduction in one area has an effect in other areas
 - Cove modeling for PRE
 - Western Canal
 - Eastern Canal



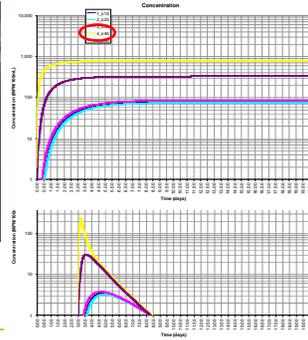


EAST

Phase 4, point source from Segment 4E (not possible from seg 1, 2, 3)



With continuous discharge:
all segments >75 MPN
With isolated discharge:
Seg 4, 0.5 day >126 MPN/100mL
Seg 4, 1.0 day > 53 MPN/100mL



17

Lake/Cove Modeling Summary

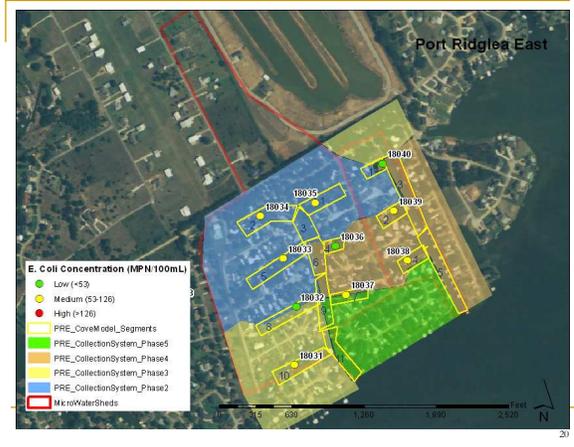
- By the end of Phase 5, no potential bacteria discharges from septic sources in PRE area.
- Loading from other sources such as non-point sources, greywater or from main lake bodies is still possible.

18

Watershed Modeling Summary (recap)

WATERSHED ANALYSIS	Current Daily Load (org/m ²)	Phase 2 Daily Load (org/m ²)	Phase 3 Daily Load (org/m ²)	Phase 4 Daily Load (org/m ²)	Phase 5 Daily Load (org/m ²)
PRE_E	565,674	394,275	222,876	0	0
PRE_W	487,186	332,943	117,899	64,991	0
Entire PRE	1,052,860	727,218	340,775	64,991	0
Total Ld PRE	1,079,856	754,214	367,771	91,987	26,996
%Reduction		30%	66%	92%	97.5%

19



20

Phasing Discussion

- Most frequent elevated concentrations are reported at stations near the lake.
- Recent high concentrations are exhibited farthest from the lake.
- If construction sequencing requires 5 phases, the current phasing plan is suitable.
- An alternative includes completion of Phase 4 before completing the SW corner of Phase 3; this provides service to nearly all of the East canal.

21

Questions or Comments?

■ EC Contacts

- Phone 512-326-5659
- David Harkins dharkins@espeyconsultants.com
- Tim Osting tosting@espeyconsultants.com
- Wenying Li wli@espeyconsultants.com
- Kendra Riebschleager kriebschleager@espeyconsultants.com

Espey Consultants, Inc.
3809 S. 2nd Street, B-300
Austin, TX 78753

