Luling Wetland Carbon and Nutrient Pilot Project

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Tierra Resources

- Mission to conserve, protect, and restore wetland ecosystems by creating innovative solutions that support investment into wetlands.
- The first globally to introduce wetland restoration to carbon markets in 2012.
- Tierra Foundation: 501(c)3 to expand research and practices that increase resilience through wetland and water management.

Carbon Goals

- Apply the ACR methodology
- Determine cost-saving measures
- Produce commercially viable carbon credits
- Compensate landowner for the use of their land without additional cost to parish or citizens
- Demonstrate public-private partnerships that leverage carbon finance
- Prove the commercial viability of wetland carbon credits
- Quantify co-benefits

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Pilot Nutrient Goals

- Quantify nutrient reduction co-benefits
- Pilot is applicable toward nutrient reductions resulting from coastal restoration:
  - Sediment diversions
  - Storm water management
- Nutrient credit trading has been identified by CPRA as a potential funding mechanism
- Entergy wants to support private investment into coastal restoration.

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Nutrient Credit

- Credit = a unit of pollution reduction usually measured in pounds equivalent.
  - A point source over-controlling its discharge.
  - Nonpoint source installing best management practices (BMPs) beyond its baseline.
  - Source EPA
- No nutrient credit methodology currently exists to monitor and quantify nutrient reductions from wetland restoration.
- Comite Resources developed the monitoring and quantification protocol that will be third-party verified.

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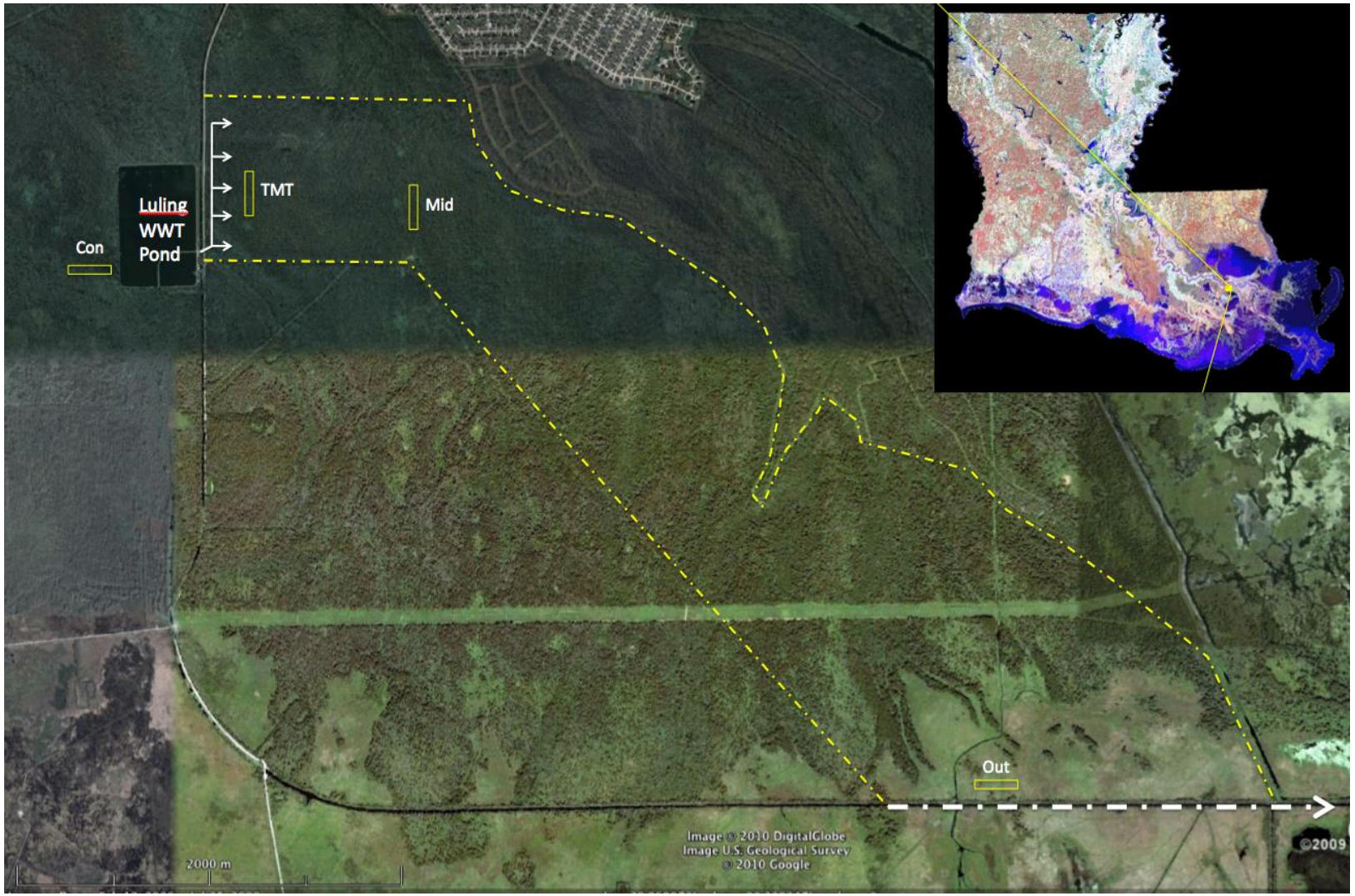
Luling Wetland Carbon (and Nutrient) Pilot!



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Key Equation

Nutrient credit = removal efficiency in lbs - uncertainty

Nutrient Credit = $((Conc_{pipe} – Conc_{out})/ Conc_{pipe}) * (1\text{-}UNC)$

**Mean annual flow calculated from DMRs*

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Nutrient Credits

Year	TP lbs removed	TN lbs removed
2006	7,434	18,815
2007	2,543	10,812
2008	12,290	30,795
2009	9,964	30,794
2010	8,240	23,317
2011	8,473	25,775
2012	12,144	41,952
2013	12,946	49,210
2014	10,576	41,644
2015	11,927	84,601
2016	10,952	46,339
2017	9,919	84,312
Total lbs	**117,409**	**488,366**
- 5% UNC	**5870**	**24,418**
Total credits	**111,538**	**463,947**

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Transaction Process

- Project Developer submits credit application to LDEQ
  - Credit application includes Project Design and Management Plan
  - LDEQ verifies
- Credit buyer sill submit a WQT plan.
  - Facility or permittee document w details of trade
  - Incorporates trading elements into a permit
  - A voluntary WQT plan only contains pertinent info

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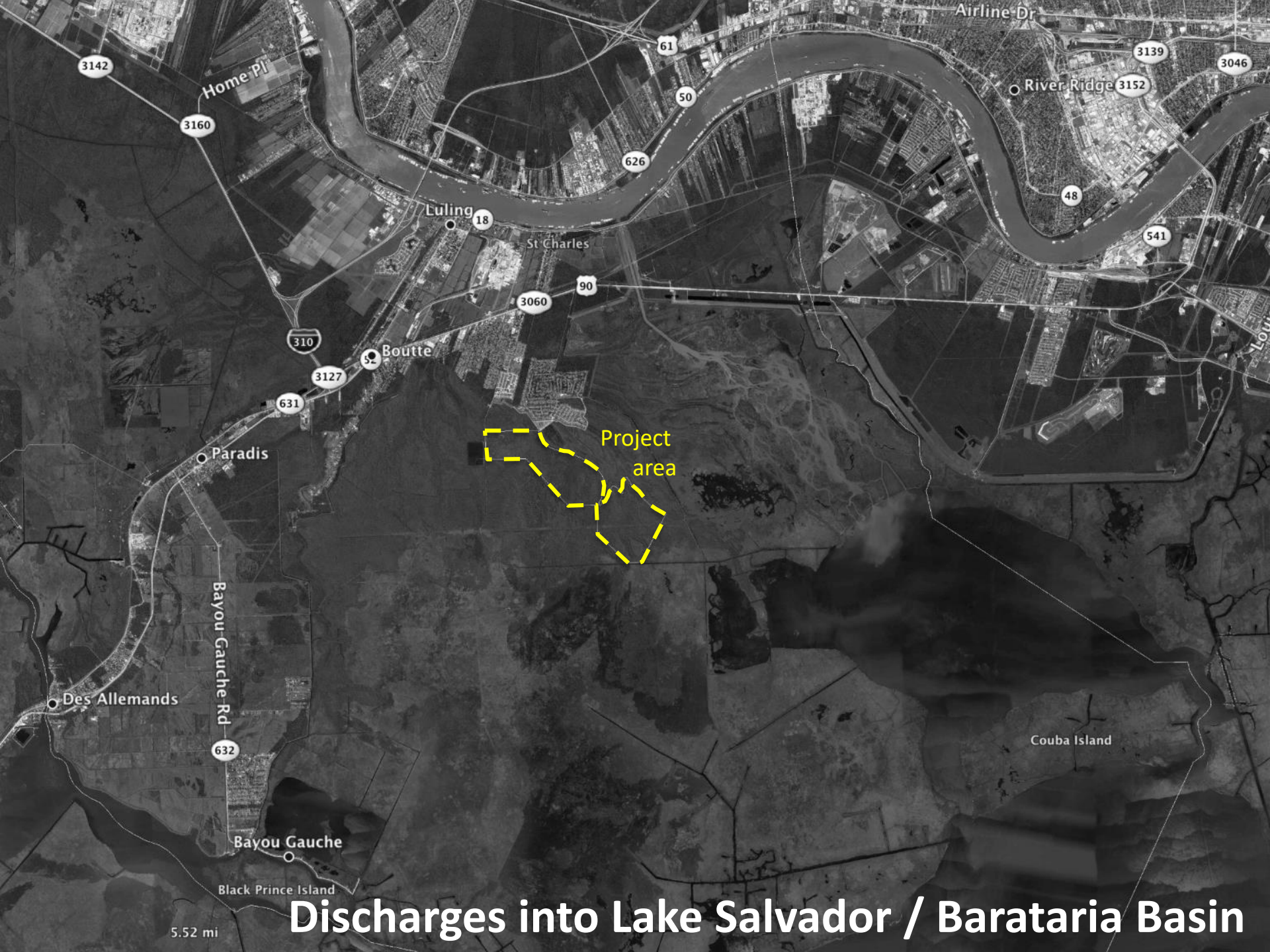

Discharges into Lake Salvador / Barataria Basin

Nutrient Trade

- Entergy can demonstrate a voluntary nutrient trade:
  - St Charles Parish Little Gypsy Power Station
  - No nutrient discharge from facility
  - strictly voluntary
- No real driver for them to purchase credits
- Will increase the value of the carbon offsets to have real monitored, quantified, and verified nutrient reductions.

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Questions for LDEQ

- Guaranteeing quality:
  - Standardized quantification and monitoring protocol for wetland restoration.
  - Template Project Design and Management Plan
- How would risk or uncertainty be calculated?
- What units?
- What time frame?
- Who acts as the third-party verifier?
  - LDEQ
  - Certified verifiers

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Conclusions

- How do you incentivize participation?
- Restoration projects will require monitoring and potentially modeling
- Will mitigation banks be eligible?
- Carefully crafted for CPRA sponsored project to be eligible
  - Public conservation funds
  - Trading areas are applicable to coastal restoration

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Thank You!

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