Deciding How Clean is Clean Enough Under the Texas Law of Risk-Based Corrective Action

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Acknowledgments

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TRRP – Th

- Sources for RBCA
  - ASTM
- Texas Risk Reduction Program “TRRP”
  - Replacing the Texas Risk Reduction Rules
  - Comprehensive system of RBCA
    - 34 guidance documents planned, 19 complete
    - Front loads investigation report and remedy evaluation into Affected Property Assessment Report (APAR)

Ch

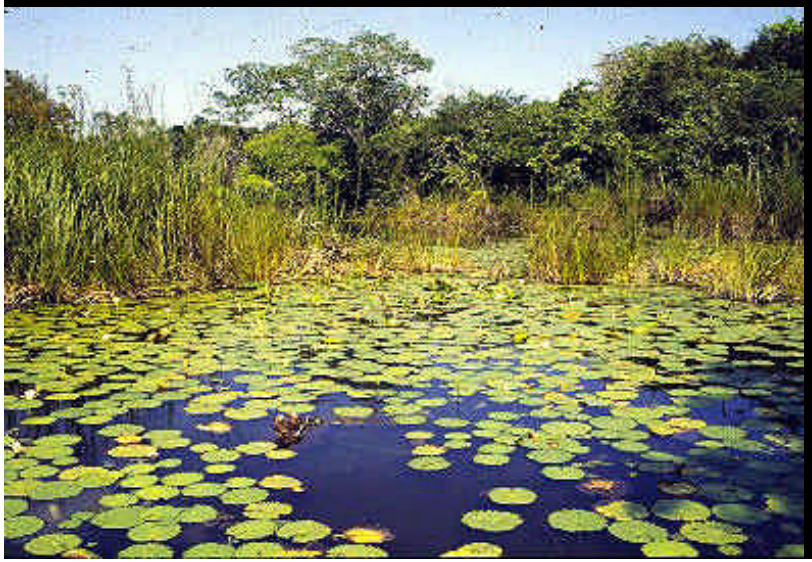
- Focus Resources / Minimize Cost of Closure
- Brownfield Redevelopment - adjunct to Voluntary Cleanup Program
- Managing / Eliminating Current and Future Risk

Understanding and Working with Limitations of TRRP

- Understanding Where Uncertainty Exists
- Protective Concentration Level (PCL) Development
- Limitations on Consideration of Additive, Cumulative and Synergistic Effects
- Role and Function of Ecological Risk Assessment (ERA)

TRRP Rule § 350.51 (a)(iv) accounts for complete exposure pathways

- Example of a complete ecological exposure pathway



DDT/DDE

Exposure Path
Human Receptors
TRRP § 350.51 (a)(iv)

- Example of a complete human health exposure pathway
- DDT, DDE, Hg, Pb, etc

Ensuring There is no Data Gaps

30 Tex. Admin Code § 350.77(c).

(Wu 2000, Pepper 2001)

Species/Sample Media	Location	OC Contaminants
Eggs	Gold Button Lagoon	DDT, DDE, DDD, methoxychlor
Soil/Sediment	Gold Button Lagoon	aldrin, lindane, methoxychlor, DDT, DDE
Nest Material/CAMs	Gold Button Lagoon	aldrin, methoxychlor, DDT, DDD, endrin

Acknowledging th
of TRRP

- Complexity of Risk Assessment under TRRP
  - Variability
  - Endpoints
  - Cost
- Science
  - Limits of Detection/Quantification
  - Effects at Low Doses?
  - Unregulated Chemicals?

TRRP's Attempt to Overcome Uncertainties and Foreseeable Scientific Advancement

30 Tex. Admin. Code § 335.35 (d)1-5

- Re-opener ? If "substantial change in circumstances":
- (1) An institutional or physical control fails to prevent exposure at the approved performance level.
- (2) An actual exposure condition is determined to be occurring at levels not protective of human health or the environment (e.g., unprotective ecological exposure is occurring).
- (3) New information indicates that the presence of COCs at the affected property was not sufficiently characterized such that an unacceptable threat to human health or the environment continues to exist.
- (4) The exposure area upon which representative concentrations are based in accordance with §350.51 of this title (relating to Affected Property Assessment) changes, and as a result of the changed exposure area, there is an unacceptable threat to human health or the environment.
- (5) A health and safety plan to ensure compliance with occupational inhalation criteria as RBELs as provided for in §350.74(b)(1) of this title (relating to Development of Risk-Based Exposure Limits) will no

Effects of Uncertainty

- Potential Liability for Responsible Party
  - Toxic tort, Latent toxic tort, Trespass, Nuisance
  - Limits ability to dispose of real estate
  - Forces accruals or insurance purchase
- Managing Current and Future Land use
  - Controls must be maintained
- Multiple Chemical Exposures?
  - The great question mark ?
- What Endpoint is being Evaluated?

Legal Risks Associated with

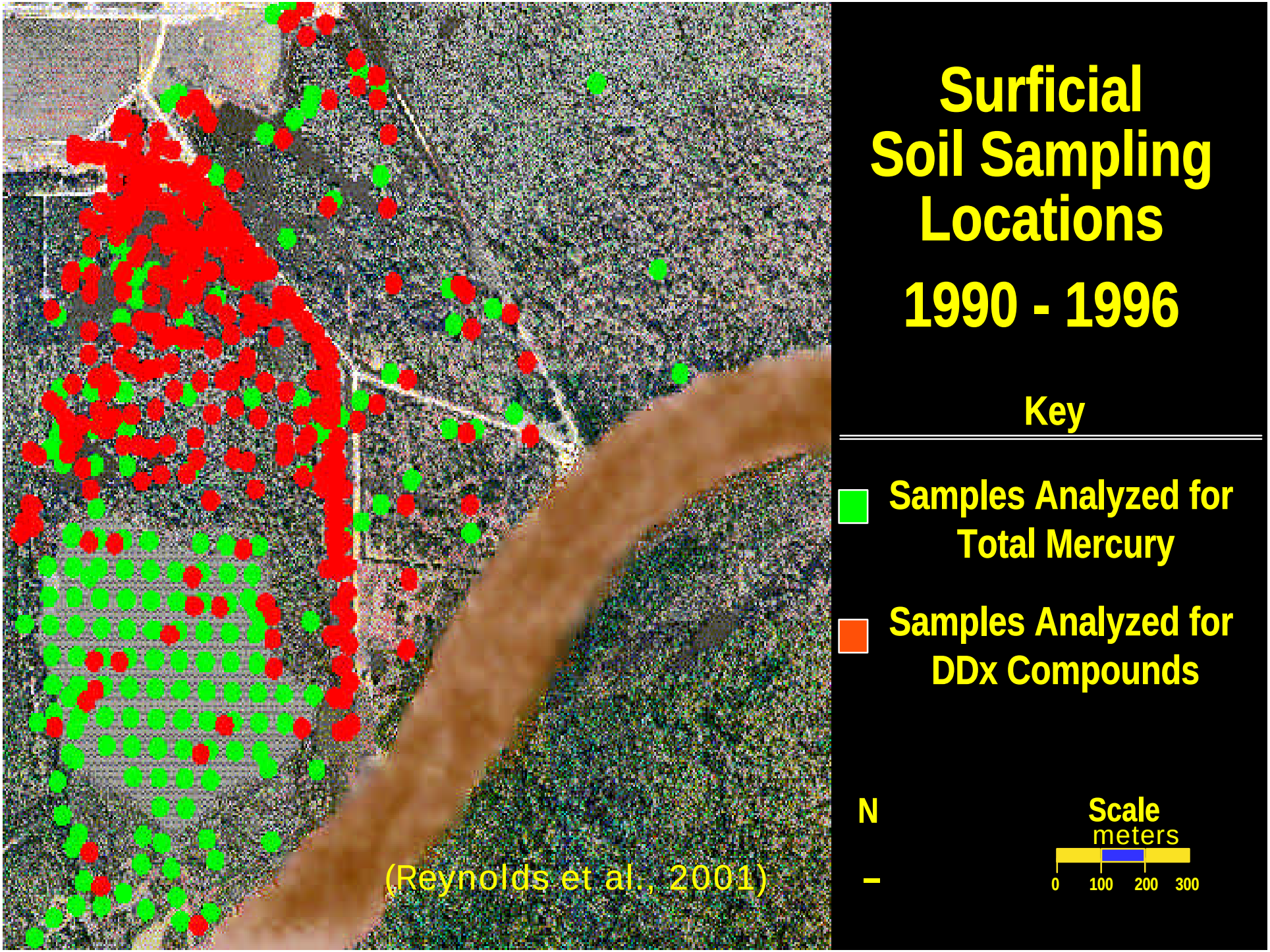
- Incompatible with Common Law Traditions
  - Trespass
  - Nuisance
  - Effect on Property Sales

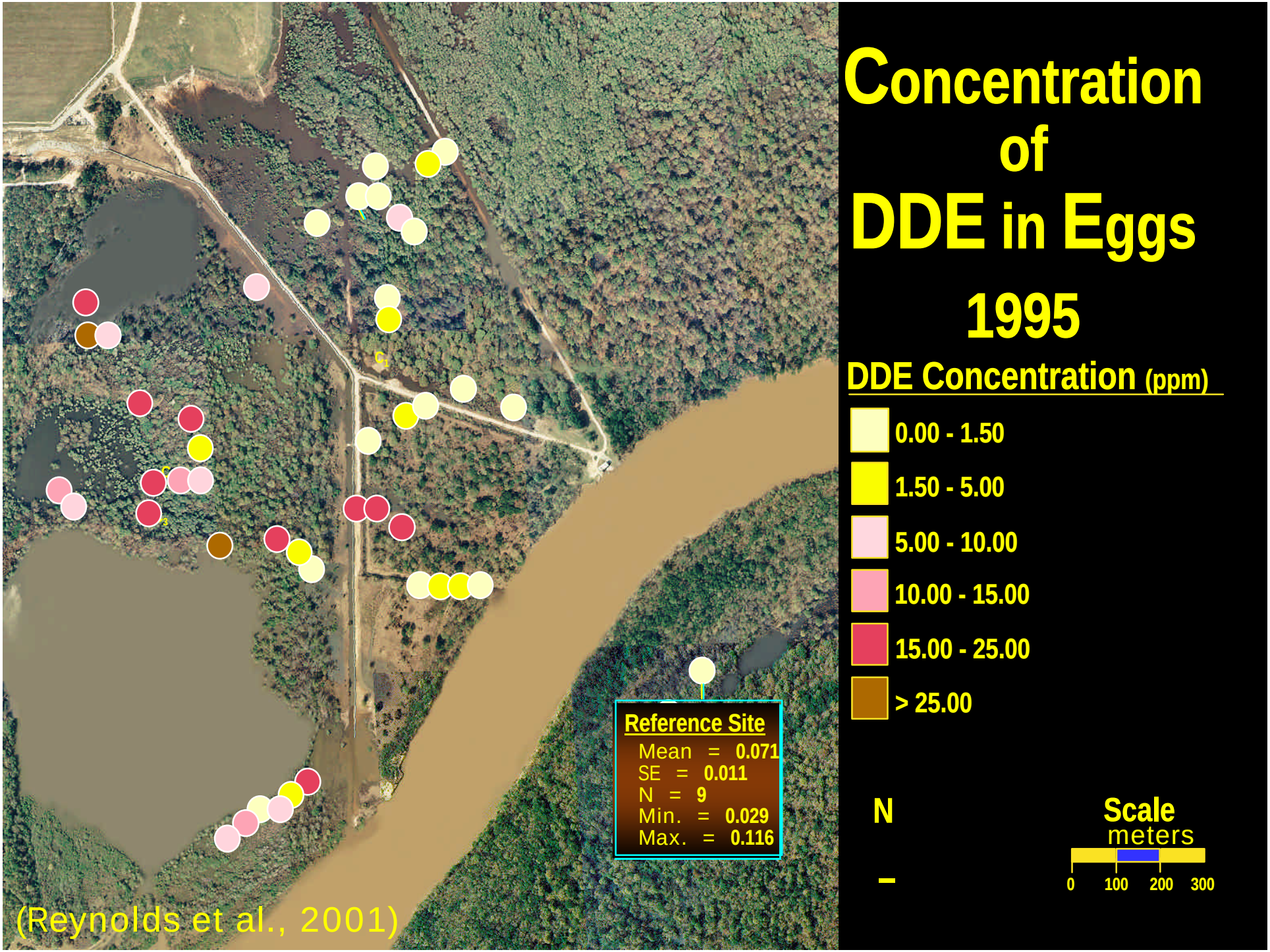
Negligence and Toxic Tort Protection

- Toxic Release
- Person is Continually Exposed
- “Assumption of the Risk”

Managing Future Liability

- Computer Modeling and GIS
  - Exposure?
  - Contaminant Flow?
  - Natural Attenuation?
- Conservative Risk Assessment
- Institutional and Physical Controls
- Insurance


Surficial
Soil Sampling
Locations
1990 - 1996
Key
Samples Analyzed for
Total Mercury
Samples Analyzed for
DDx Compounds
N
Scale
meters
0
100
200
300
(Reynolds et al., 2001)


Concentration of DDE in Eggs 1995
DDE Concentration (ppm)
0.00 - 1.50
1.50 - 5.00
5.00 - 10.00
10.00 - 15.00
15.00 - 25.00
> 25.00
Reference Site
Mean = 0.071
SE = 0.011
N = 9
Min. = 0.029
Max. = 0.116
N
Scale
meters
0
100
200
300
(Reynolds et al., 2001)

Efficient Protection