

Ouachita Baptist University

## Scholarly Commons @ Ouachita

---

Scholars Day Conference

Scholars Day 2024

---

Apr 24th, 2:30 PM - 2:45 PM

### An Analysis of Pollution in Liverpool, UK

Luke W. Lawson

*Ouachita Baptist University*

Follow this and additional works at: [https://scholarlycommons.obu.edu/scholars\\_day\\_conference](https://scholarlycommons.obu.edu/scholars_day_conference)



Part of the [Nature and Society Relations Commons](#), and the [Other Life Sciences Commons](#)

---

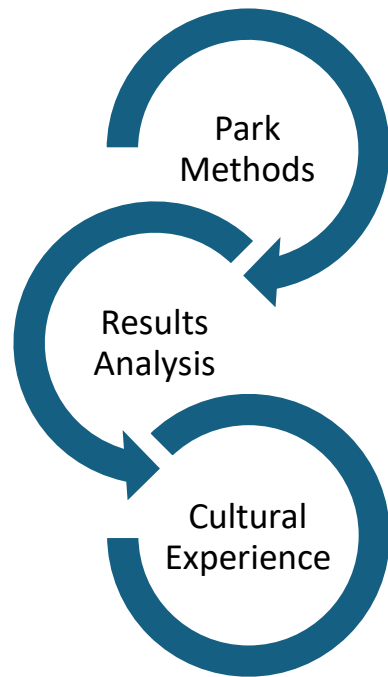
Lawson, Luke W., "An Analysis of Pollution in Liverpool, UK" (2024). *Scholars Day Conference*. 4.  
[https://scholarlycommons.obu.edu/scholars\\_day\\_conference/2024/honors\\_theses\\_b/4](https://scholarlycommons.obu.edu/scholars_day_conference/2024/honors_theses_b/4)

This Thesis is brought to you for free and open access by the Carl Goodson Honors Program at Scholarly Commons @ Ouachita. It has been accepted for inclusion in Scholars Day Conference by an authorized administrator of Scholarly Commons @ Ouachita. For more information, please contact [mortensona@obu.edu](mailto:mortensona@obu.edu).

# An Analysis of Pollution in Liverpool, UK

Luke Lawson

# Summer Research at Liverpool Hope University



Location	Method Used
Stanley Park	Magnetic Susceptibility
Lunt Meadows	X-Ray Fluorescence Analysis (XRF) and Water Testing
Woolton Road	X-Ray Fluorescence Analysis (XRF) and Magnetic Susceptibility

# Stanley Park

---

- 2 Transect taken across Stanley Park
- Divided Transect into Clusters A-J
- Sub Clusters a-j

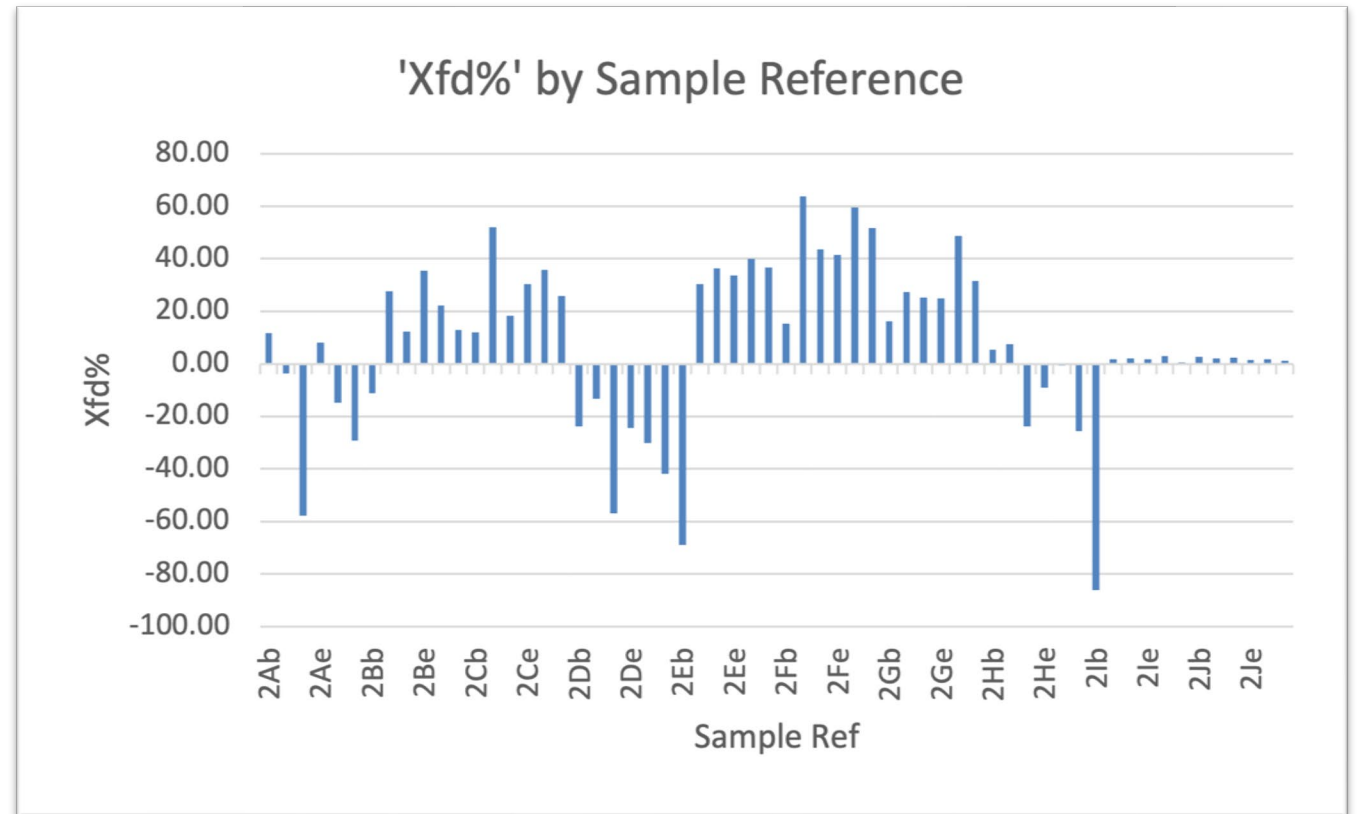


[2]Price, Mike. "Stanley Park, Liverpool through the Years." *Liverpool Echo*, 19 June 2015, [www.liverpooecho.co.uk/whats-on/whats-on-news/gallery/stanley-park-liverpool-through-years-9105142](http://www.liverpooecho.co.uk/whats-on/whats-on-news/gallery/stanley-park-liverpool-through-years-9105142). Accessed 24 Apr. 2024.



# Stanley Park Results (Magnetic Susceptibility)

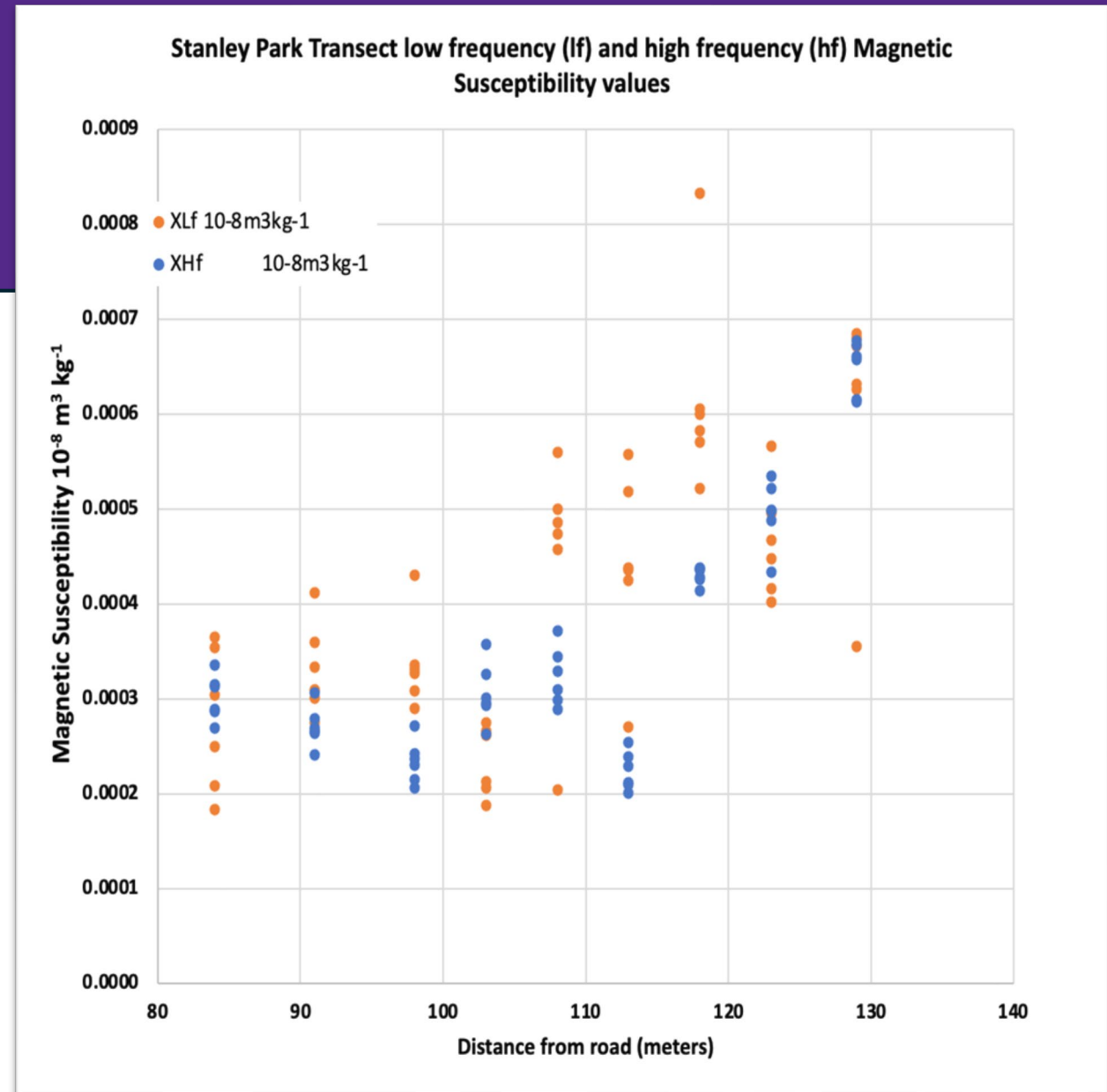
- Suggestion of diamagnetic and paramagnetic materials
- High variability among data



*Xfd% by Sample Reference (Name)*

# Stanley Park Results contd.

- Subclusters 2Ha, 2Ia, and 2Ja
- Heated them
- Ran through Magnetic Susceptibility instrument



*Xlf and XHf by Distance from Road (graph made by Dr. Halsall)*

# Lunt Meadows

- Old Landfill Site
- Possible Mesolithic Site
- Interest of preservation and funding from city
- Problem: Runoff affecting Mesolithic Site and Reed Beds



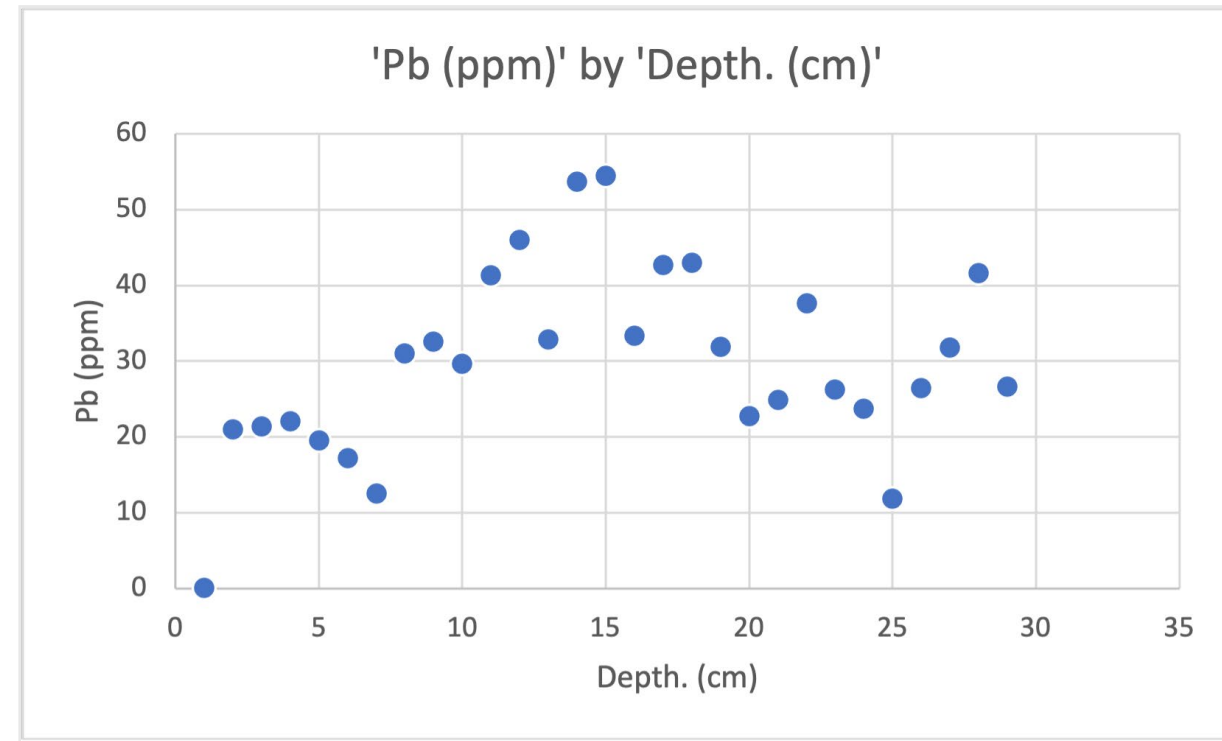
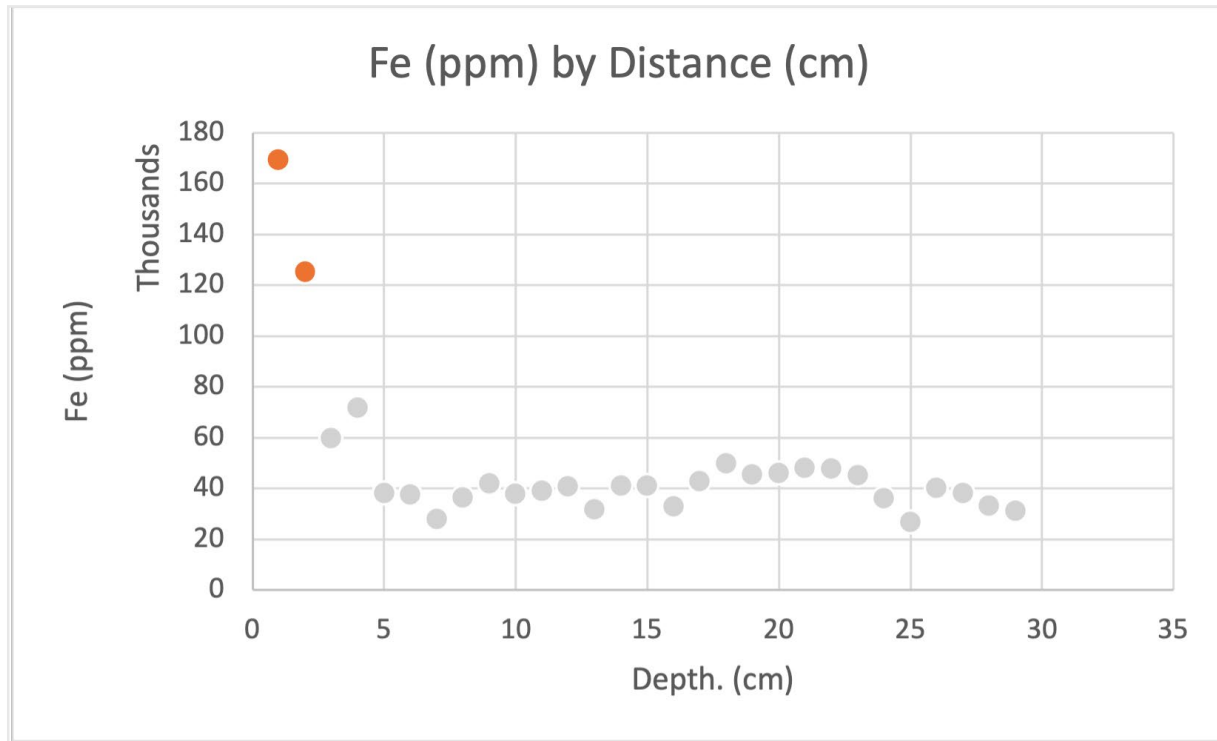
# Lunt Meadows Methodology

- Core and Water Sample 1 taken near landfill site
  - Labeling
  - Drying
  - XRF
- Water Sample 2 taken near Reed Bed.



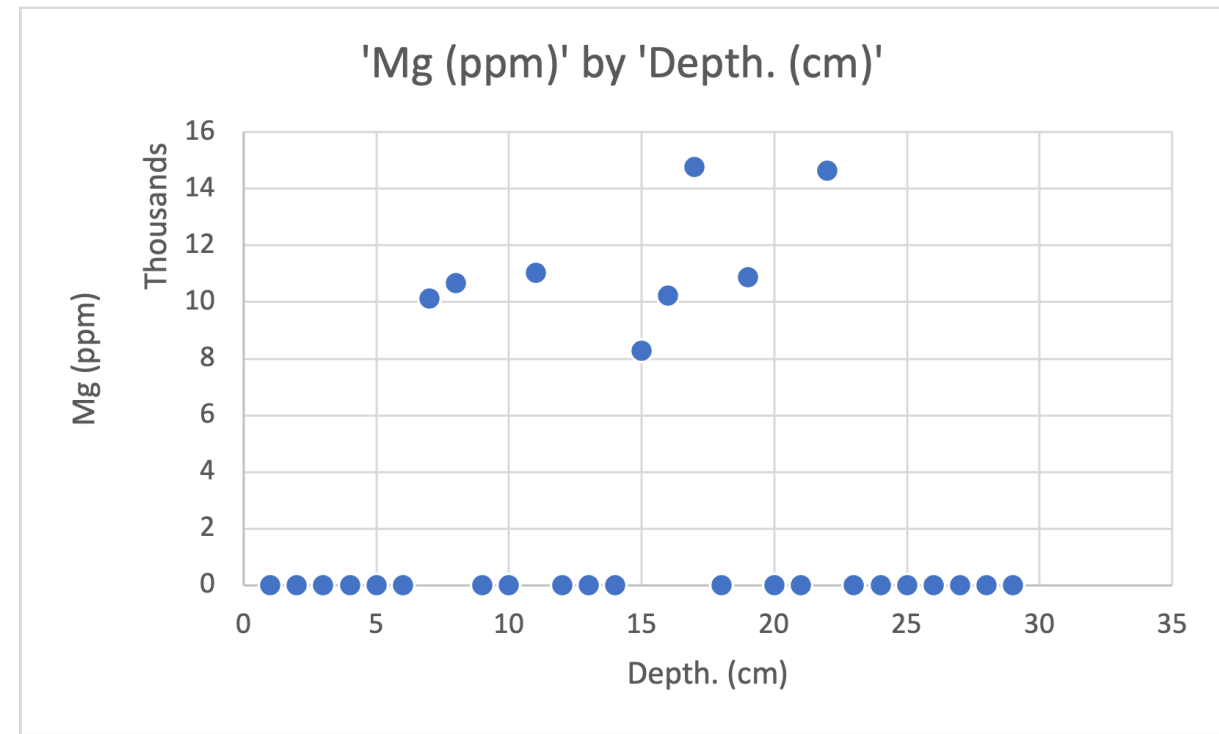
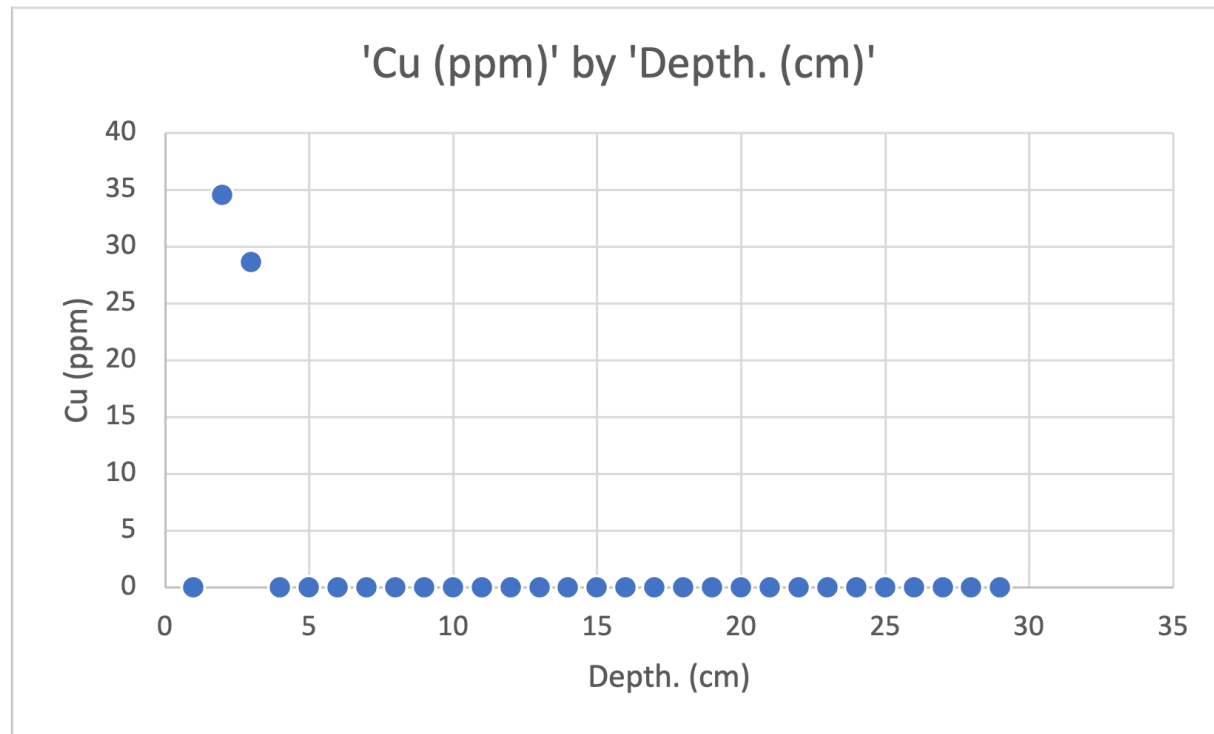


# Lunt Meadows Significant Results (XRF)



P-value: 0.997

# Lunt Meadows Significant Results (XRF)



# Lunt Meadows Water Testing

## Water Quality data at Lunt Meadows

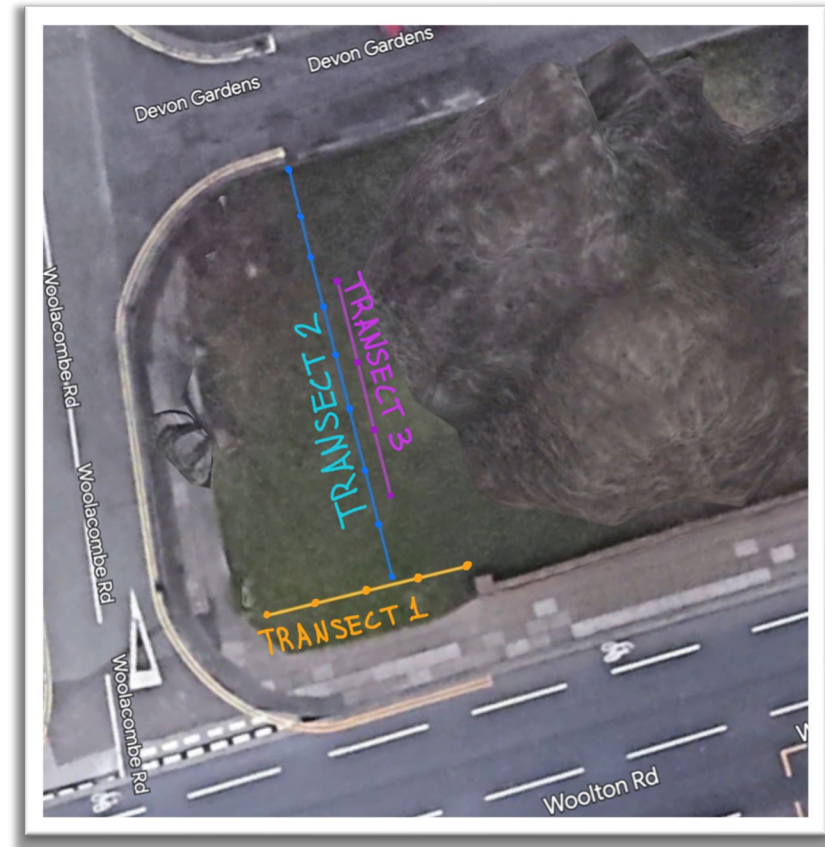
Sample Name	Phosphate	Nitrate
Lunt Sample 1	10 mg/L	75 mg/L
Lunt Sample 2	10 mg/L	75 mg/L

Comparative Testing for phosphate and nitrate



# Woolton Road

- 3 Transect taken across Woolton Road
  - 2 perpendicular to road
  - 1 parallel to road
- Sample's 2 centimeters deep taken every 2 meters

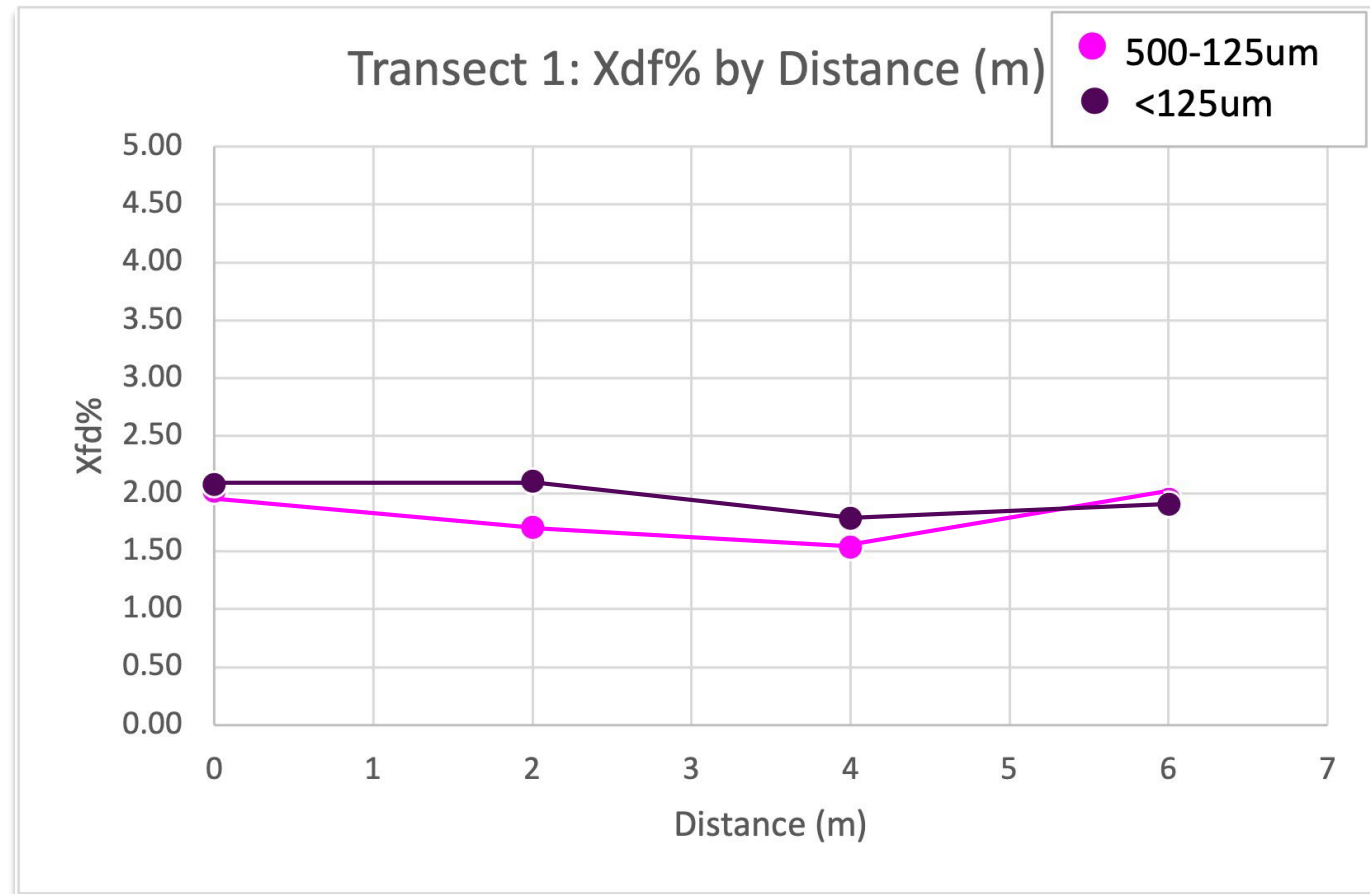


# Woolton Road Magnetic Susceptibility Results

## Transect 1

### Transect 1

- Mowed area of grass
- Data between 1.50 – 2.00 %



# Woolton Road Magnetic Susceptibility Results

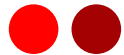
## Transect 2 and 3

### Transect 2

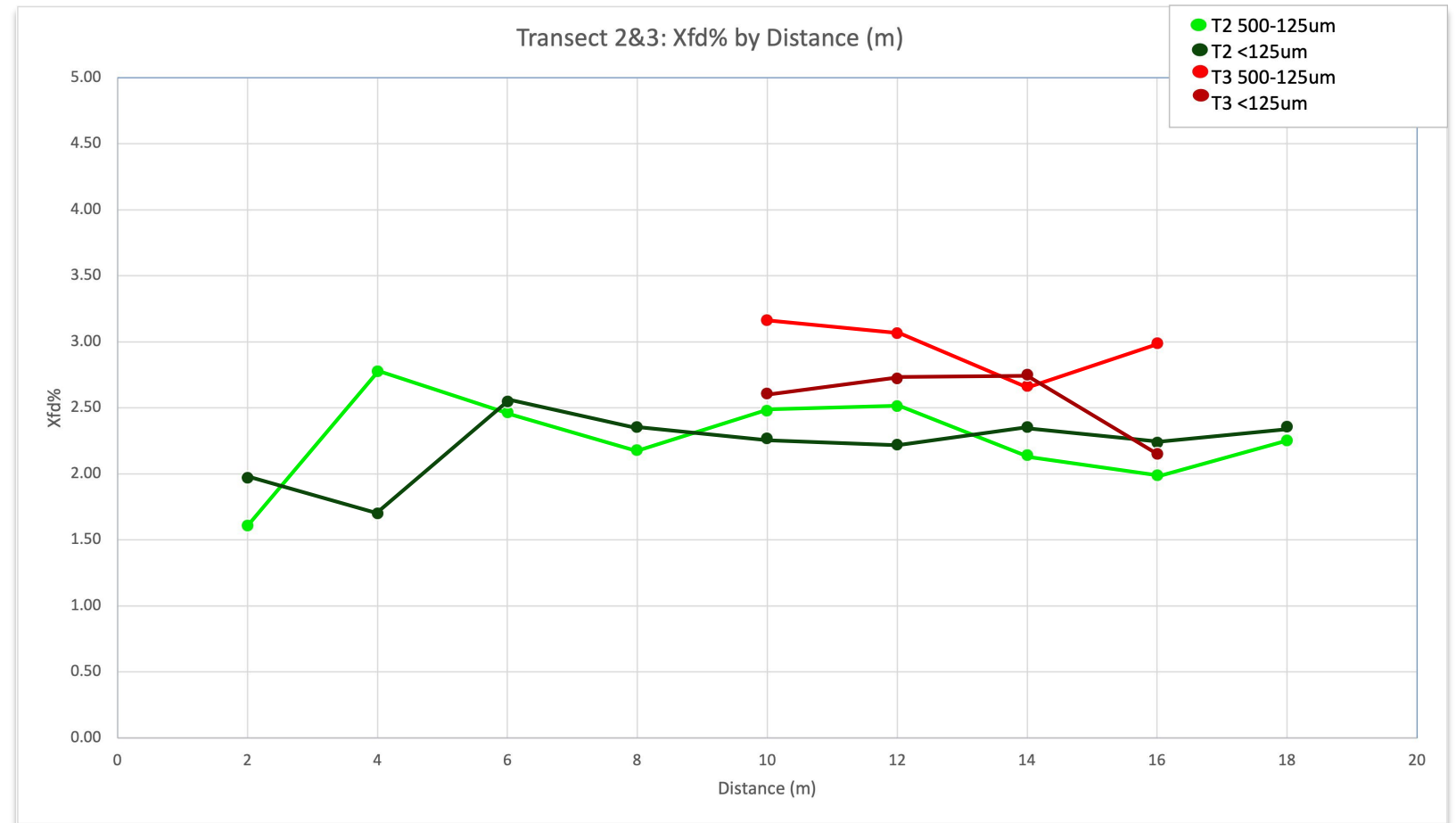


- Mowed Area of grass
- Most data between 2.00 – 2.50%

### Transect 3



- Unmowed area of grass
- Most data between 2.50– 3.00%
- Further Tested using XRF with no significant results found



# Conclusions

## Stanley Park

- Transect 2 analyzed
- Suggestion of diamagnetic and paramagnetic materials
- Highly variable data

## Lunt Meadows

- 1 Core and 2 Water Samples
- Possible Leaching of iron and lead
- High amounts of nitrate found in the water

## Woolton Road

- Analyzed 3 transects.
- No strong evidence for pollution in soil
- No strong correlations found from XRF

# Cultural Experience





# Cultural Experience



# Acknowledgements

Dr. Angela Creevy

Dr. Jennifer Clear

Dr. Karen Halsall

Mr. Leon O'Callaghan

Dr. Tim Knight

Patterson Summer Research Grant

Questions?