

# Jane Herbert

## Project Manager – Essex and Suffolk Rivers Trust

# Managed Aquifer Recharge - Suffolk



**Jane Herbert**  
**Project Manager, Essex and Suffolk Rivers**  
**Trust**

# Topsoil Project overview

- Partners from the Netherlands, Belgium, Germany and Denmark as well as the UK.
- Trials and projects to tackle one or all of the following:
  - ❖ Flooding in towns and agricultural areas. Rising groundwater table due to changed precipitation patterns.
  - ❖ Salt water intrusion into freshwater reserves due to rising sea levels and changed irrigation, drainage and drinking water demands.
  - ❖ Need for a groundwater buffer to store water in periods of excess rainfall. The buffer of fresh water can be used for irrigation in dry periods.
  - ❖ Better knowledge and manage of soil conditions can give better resilience to extreme rain events and improve water quality and improve crop yields.
  - ❖ There is an unexplored capacity to break down nutrients and other environmentally hazardous pollutants in the uppermost layers. By improved understanding changed land management can be implemented.



# Managed Aquifer Recharge trial

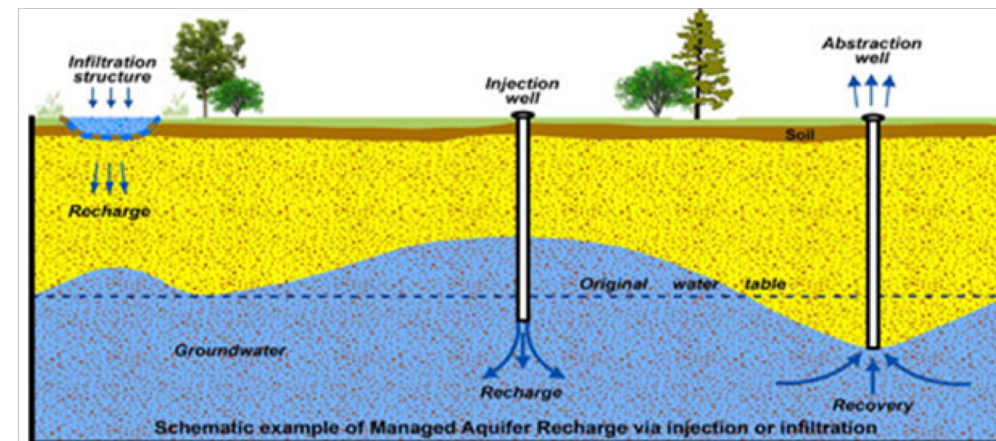
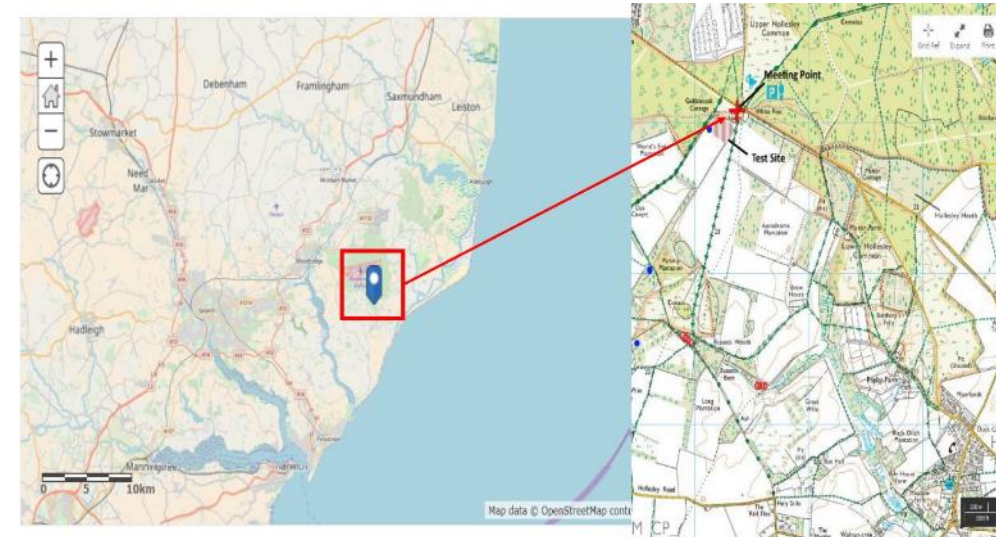
## ➤ Challenges

- ❖ Sand soil
- ❖ Vegetables a common crop
- ❖ Low rainfall area
- ❖ High public demand
- ❖ Need water storage solutions

## ➤ Basic Principle: Capture excess surface water at high flows and artificially recharge aquifer for use during summer/low flow periods

## ➤ Question to answer

1. Is untreated water of sufficient quality?
2. How easy is it to get the water into aquifer?
3. Does water remain available for long enough?



# Challenges and delays we faced

- Trial required a license which was not supported by regulator (EA)
- Unnecessary risk to groundwater water quality
- Not seen as a viable solution
- Only willing to support transfer from one part of the aquifer to another or use of treated water
- Against using untreated water from local water courses
- Low rainfall

**= Trial delayed!**



# Trial begins and initial results

- Trial began mid February and is ongoing
- The site we are using is Broxstead Estate in Sutton, Suffolk





# Trial begins and initial results

- Trial begins
- The site is prepared
  - ❖ The site is prepared
- The Land is prepared
  - ❖ Will be used for the trial
- Application of water
  - ❖ The water is applied



on  
ring trial.  
caused any



# Trial begins and initial results

mid February and is ongoing

and is being carried out by Essex and Suffolk Rivers Trust

work is being carried out in the field to install a water meter and a water flow meter. The work is being carried out by a contractor who is using a drilling rig to install the meters. The rig is being used to drill a hole in the ground to install the meters. The rig is being used to drill a hole in the ground to install the meters. The rig is being used to drill a hole in the ground to install the meters.

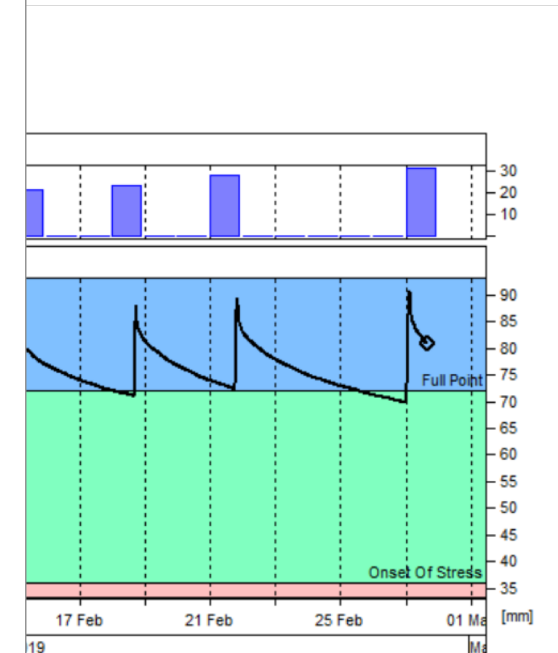
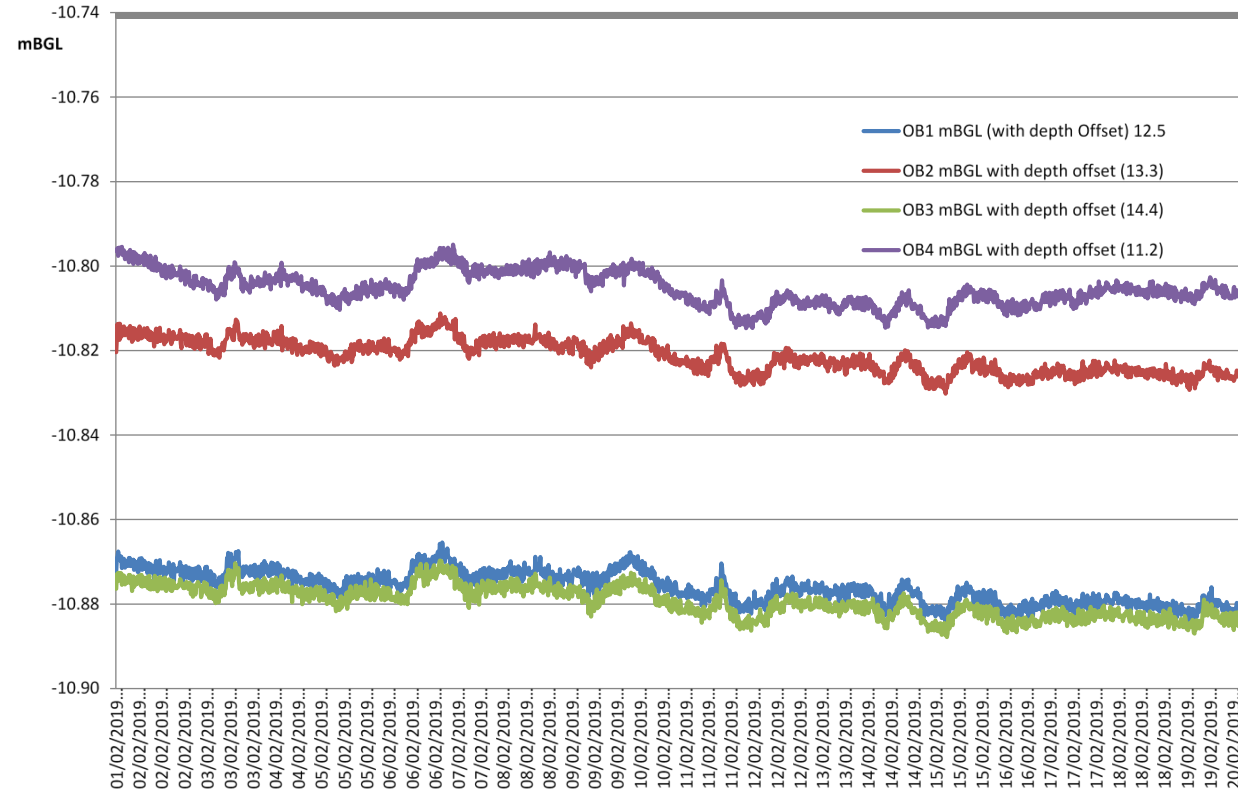
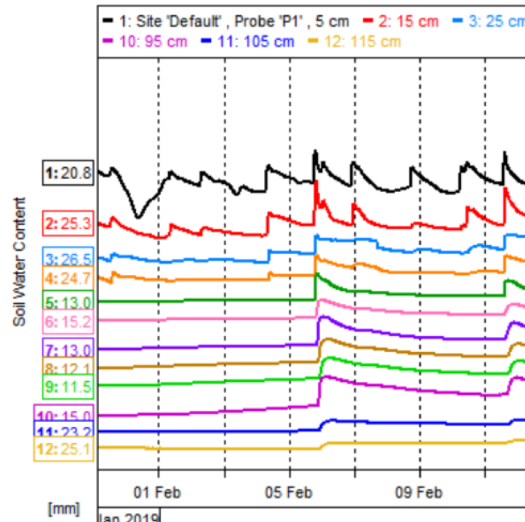




# Trial begins and initial results

## ➤ Trial began m

Name: **PaulsHire1**  
 Logger: PaulsHire1  
 Last Reading: 27/02/2019 03:00:00 PM  
 Comment: 2nd Probe



- ❖ Soil moisture
- ❖ Borehole re
- groundwater

increase in

# Trial begins and initial results

- Trial began mid February and is ongoing
- The site we are using is Broxstead Estate in Sutton, Suffolk
  - ❖ The landowner, A J Paul, very helpful and engaged with the process.
- The Landowner established a rye grass cover crop in the autumn in preparation for the trial
  - ❖ Will help to filter out any contaminants in the water and protect the soil during trial.
- Application method; use irrigators to simulate rainfall
  - ❖ There has been some pooling of water in areas of the field but this has not caused any water quality/contamination problems.
- We have installed soil moisture monitors and are using 3 boreholes to monitor water levels
- Initial results are promising
  - ❖ Soil moisture probes show increase in moisture across the site
  - ❖ Borehole results = early days but looks like we may be inducing a small increase in groundwater levels across a surprisingly large area of the aquifer.
- Volumes applied so far; about 10,000 m<sup>3</sup> 25mm/week across 10ha
- Trial will continue till end March or when 24,000 m<sup>3</sup> of water has been applied (licence restriction).



# Next steps

- Continue to monitor water level until September 2019 and see how much water is lost/remains in aquifer
  - ❖ Including calculation of input from rainfall.
- Produce a report on the results and determine if it is a viable water storage method for farmers.
- Use outcomes to shape next trial planned in next 2 years
  - ❖ Will use lessons learned to improve process
  - ❖ Funding achieved and work planned at the end of 2019
- Abstraction Reform trial in East Suffolk
  - ❖ One solution suggested for water storage
  - ❖ Depends on results from trials
  - ❖ Will need support for statutory regulators (EA)





# Thank You

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