



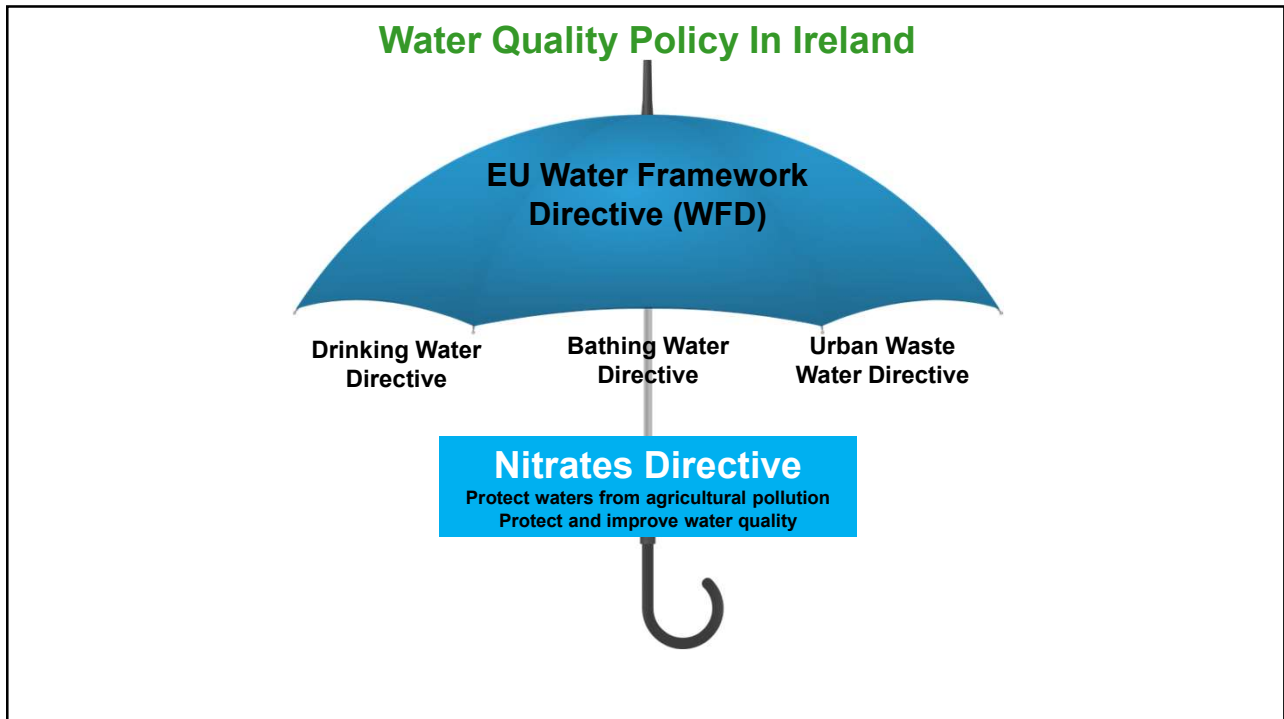
**Derogation Training**

WEST CORK AGRI SERVICES LTD  
Owen O' Driscoll & Associates

**ACA**  
Agricultural Consultants Association

An aerial photograph of a rural farmstead with a large brown field, a blue pond, and various buildings, with some areas highlighted in yellow and purple.

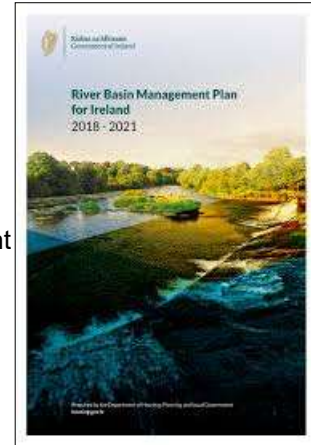
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2

## Water Quality Policy In Ireland

- EU Water Framework Directive (WFD)
  - Protect and enhance all waters
  - Achieve 'Good Status' for all waters by 2027
  - Manage water bodies based on river catchments
  - Engage with the public
- Plan to achieve WFD obligations set out in Irelands 'River Basin Management Plan' (RBMP)
  - Current RBMP more focused on problem water bodies
  - Identify pressures and rectify problems - 'right measure in right place'
  - Greater level of collaboration
  - LAWPRO and ASSAP
  - Draft version of Irelands 3<sup>rd</sup> RBMP ready by end of 2021
- Nitrates Directive implemented by Nitrates Action Programme
  - Good Agricultural Practice (GAP) Regulations SI No 605 of 2017 give legal effect to current NAP
  - Apply for Derogation to farm at >170 kgs N/Ha
  - Interim review of by DAFM <https://www.catchments.ie/public-consultation-on-irelands-nitrates-action-programme/>



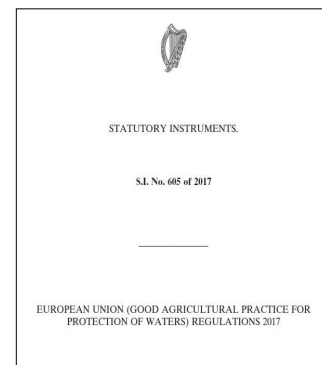
3

## Water Quality Policy In Ireland

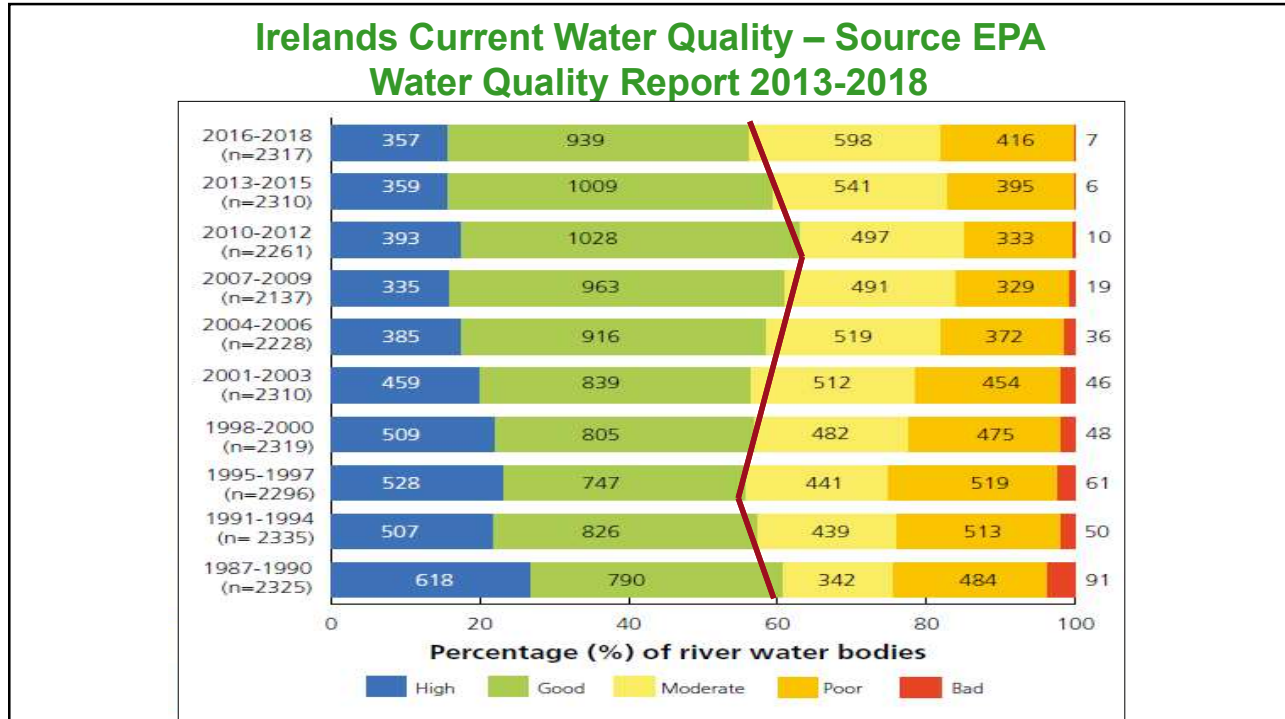
### • Good Agricultural Practice (Nitrates) Regulations

- Key national legislation to protect water from agricultural pressures
- Sets out requirements and limits on farming
- Ireland applies to the EU every 4 years for 'Derogation'
- Current derogation ends on 31 December 2021
- 7,000 farmers availing of derogation and 5,000 more exporting slurry to avoid derogation

	2014	2015	2016	2017	2018
Number	5,800	6300	6800	7000	6891
Area	332,200	351,900	409,800	432,300	445,200
Avg. Size	58	56	60	62	65
LU/ Farm	139	146	149	150	162



4



5

## Ireland's Current Water Quality

<b>HIGH</b>	<b>Q 5</b>
<b>GOOD</b>	<b>Q 4</b>
<b>MODERATE</b>	<b>Q 3</b>
<b>POOR</b>	<b>Q 2</b>
<b>BAD</b>	<b>Q 1</b>

**Surface Water Quality status is determined from:**

**Ecological Status**

- Macro invertebrates
- Aquatic Plants
- Macro Algae
- Fish
- Q value 1-5

**Physiochemical elements**

- Nutrients
- Oxygen
- pH

**Hydro morphological elements**

- Hydrology
- Morphology
- Barriers

**One out ALL out**

6

## What 'bugs' tell us about water quality



### Pollution sensitive species



Mayfly



Cased Caddis



Stonefly

### Pollution tolerant species



Freshwater Shrimp



Leech



Blackfly Larvae

7

## Kick Sampling Video

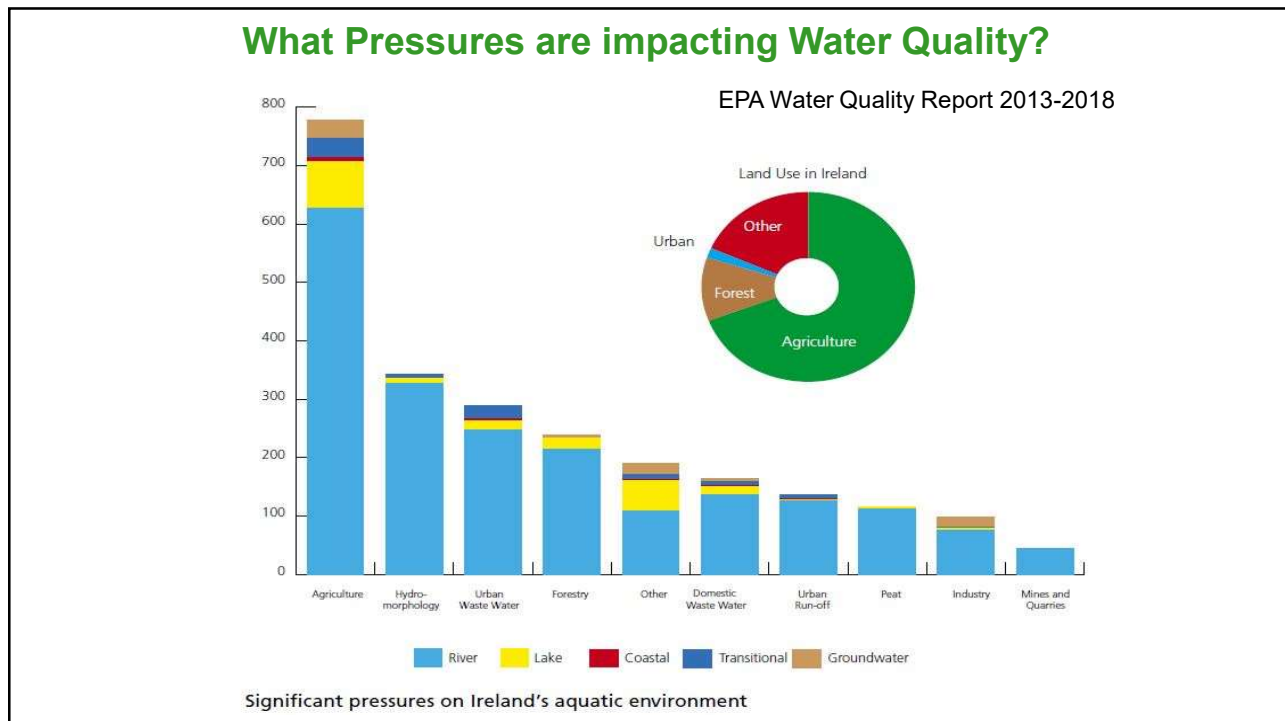
<https://www.teagasc.ie/environment/water-quality/water-quality-week/water-quality-and-catchment-management/#kicksampling>

8

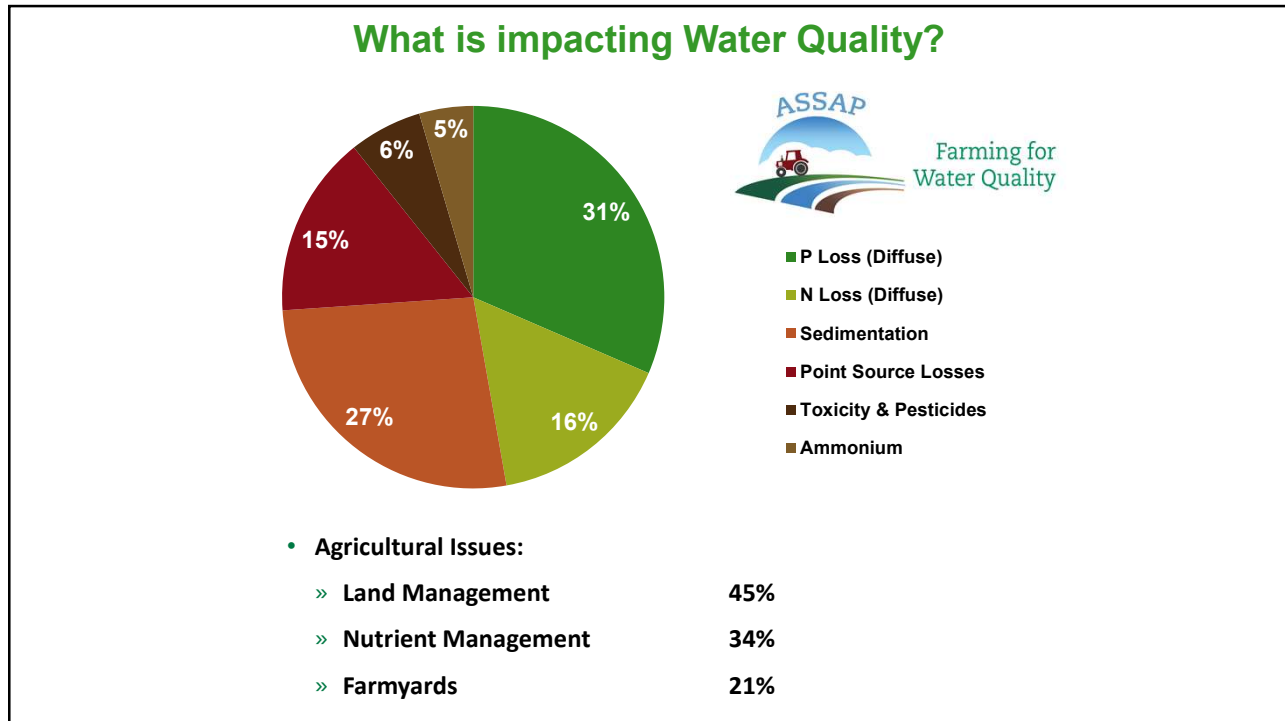


What human activities are impacting water quality?	How is agriculture impacting on water quality?
<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Hydro morphology – physically altering stream</li> <li>• Urban areas</li> <li>• UWWTP &amp; Septic tanks</li> <li>• Forestry</li> <li>• Industry</li> <li>• Peat</li> <li>• Quarries</li> <li>• Roads</li> </ul>	<ul style="list-style-type: none"> <li>• Diffuse Nutrient losses</li> <li>• Pesticides</li> <li>• Point sources</li> <li>• Stocking rates</li> <li>• Sediment losses</li> <li>• Bacteria/coliforms</li> <li>• Toxic substances</li> </ul>
What can you do to help improve water quality?	What can you do to help improve water quality?
<ul style="list-style-type: none"> <li>• Manage soiled water &amp; farm yard wastes</li> <li>• Adequate slurry storage</li> <li>• NMP – implement</li> <li>• Buffers</li> <li>• Roadways</li> <li>• Fencing watercourses – sediment</li> <li>• Correct disposal of toxic wastes</li> </ul>	<ul style="list-style-type: none"> <li>• Promote an ASSAP/advisory visit</li> <li>• Financial and socio economic</li> <li>• Weather conditions</li> <li>• Fertiliser and slurry – correct rates, timing, locations</li> <li>• poaching of fields/out wintering/supplementary feeding</li> </ul>

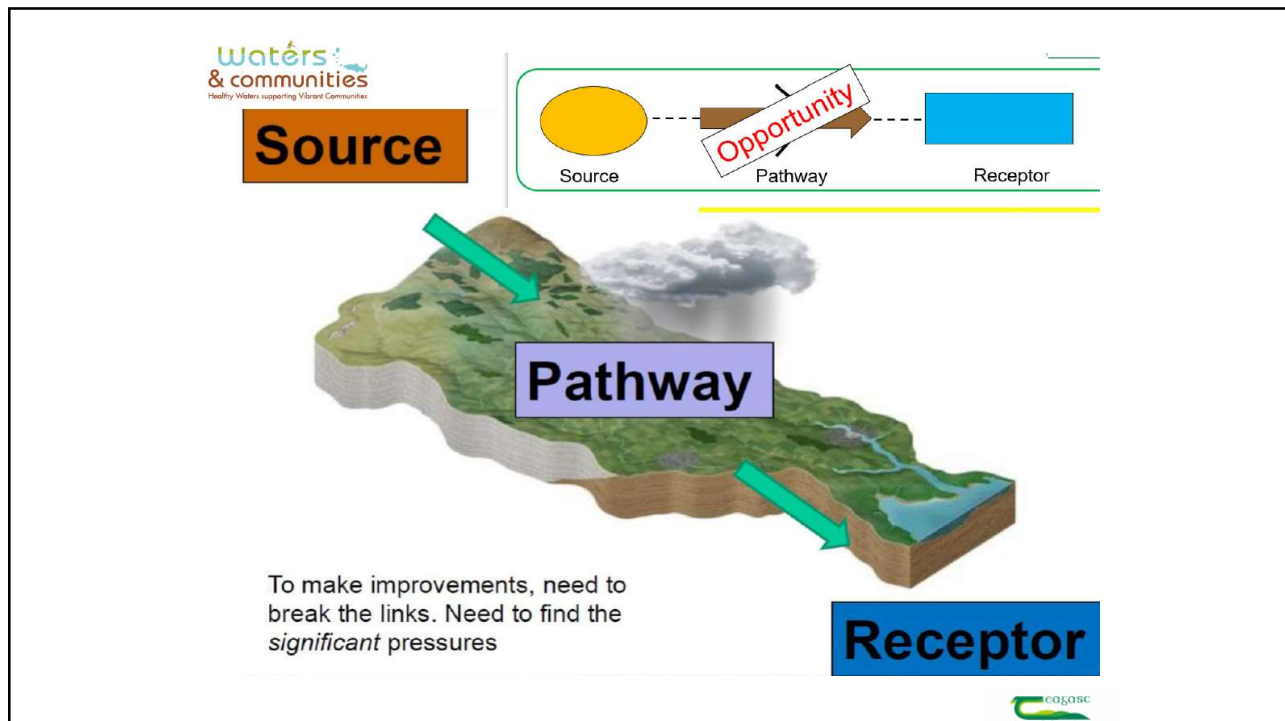
9



10



11



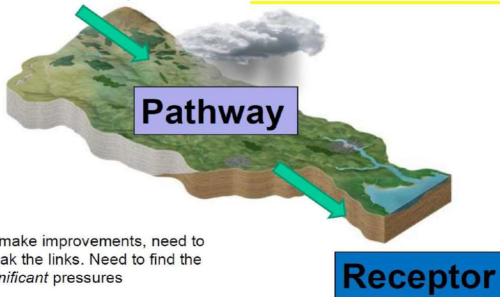
12

## What Causes Diffuse P & Sediment Loss?

1. Most losses from low permeability soils
2. Heavy rainfall leads to **overland flow of water**
3. P and soil sediment washed off into drains & streams

Waters  
& communities  
Healthy Waters. Healthy People. Healthy Communities.

**Source**



13

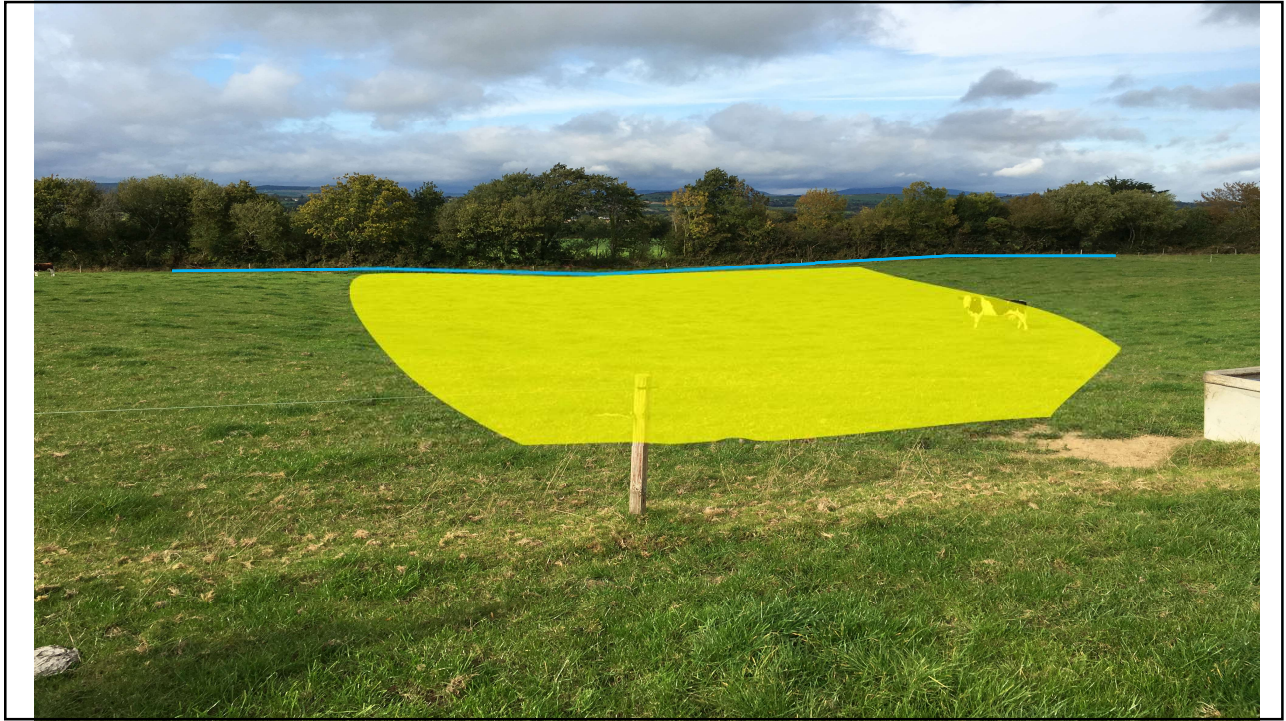
## Critical Source Areas (CSA's)

- Critical Source Areas (CSA's) are areas that are at highest risk of impacting a water body.
- Often low-lying parts of farms where runoff accumulates in high concentration.
- Runoff from CSA's carries sediment and nutrients (N & P) to waterways.
- Identification of CSA's necessary to reduce nutrient, sediment and pesticide losses.
- Important to apply appropriate farm management practices



14





15



16



17

### Pollution Impact Potential (PIP) Maps

- PIP maps developed by the EPA
- Help focus on the areas and sources that might be impacting water quality.
- Help identify diffuse P and diffuse N losses.
- The darkest blue areas (PIP rank 1) show the farmland with the highest risk for diffuse P losses.
- High risk areas often coincide with poorly drained land

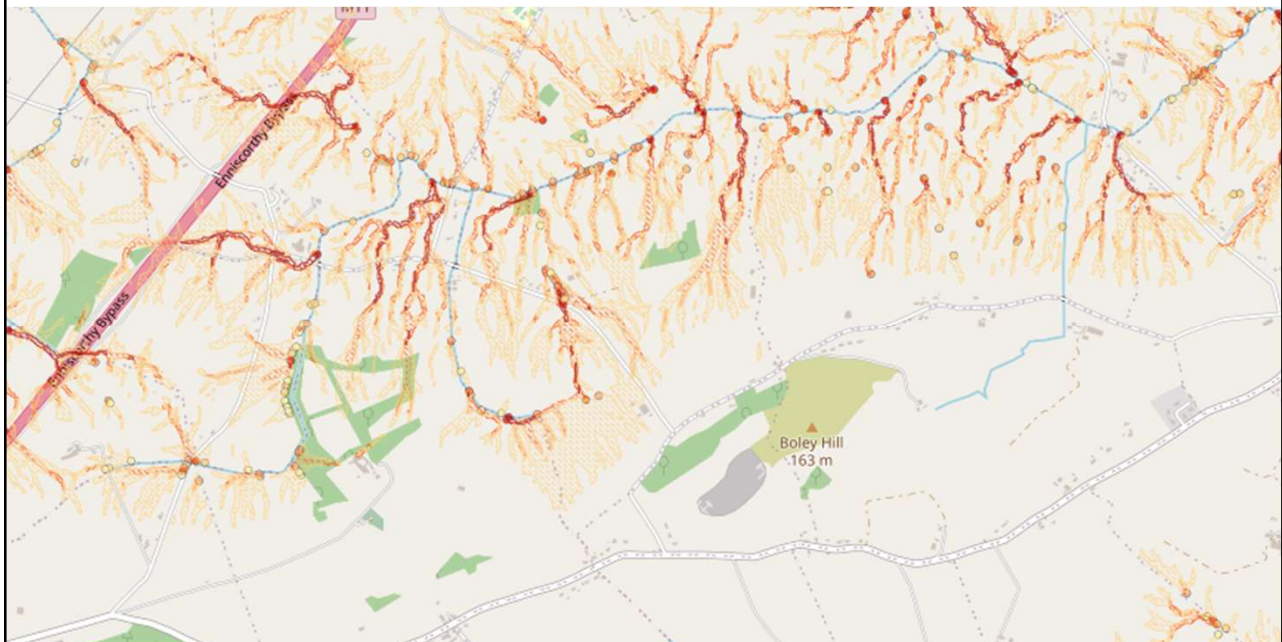


PIP map for  
Phosphorus.  
Source EPA and  
OSI

18



## Overland flow pathways and delivery points



19

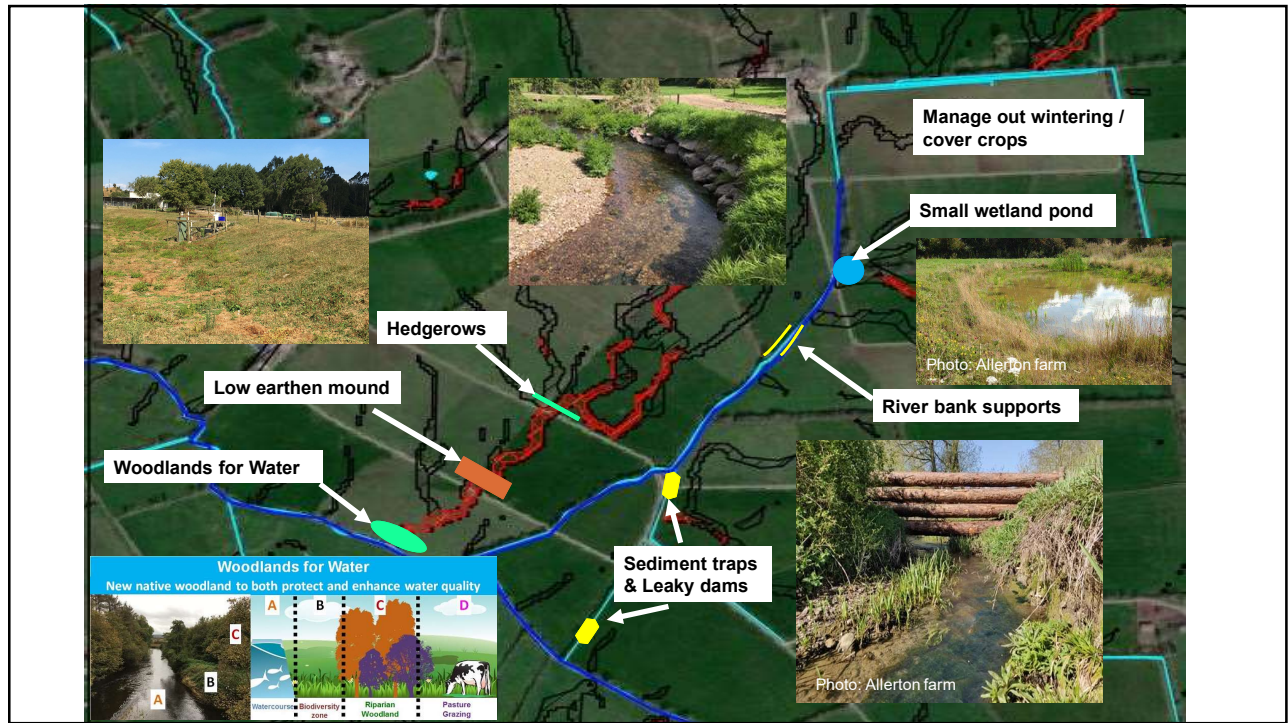
## What can be done to reduce/prevent P & sediment losses?

### **Break the pathway!!**

- Identification and Management of critical source areas (CSA's)
- Buffer margins
- Riparian margins
- Hedgerows
- Cover crops
- Wetlands and low earthen mounds
- Woodland planting or margins
- Alleviate compaction of adjoining farmland
- Managing out wintering of livestock – suitable locations
- Manage stocking rates
- Reduced P applications
- Appropriate re-seeding management
- Sediment traps & leaky dams
- River bank supports



20



21

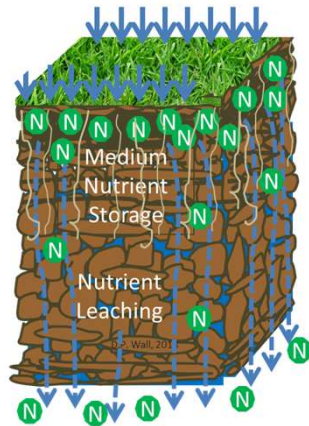


22



## What Causes Diffuse N Loss?

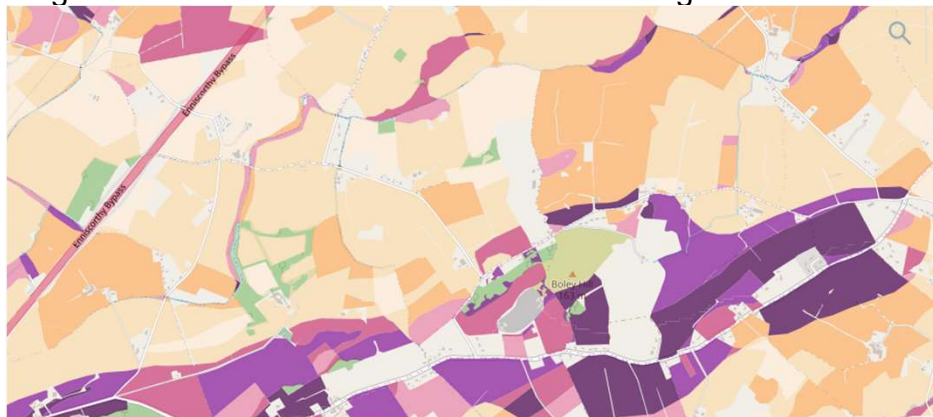
1. Most N losses from free draining soils
2. N does not bind tightly to soil
3. Leaching occurs where more N applied than plant needs
4. Excess N is leached by rain to waters



23

## Pollution Impact Potential (PIP) Maps - Nitrogen

- Map identifies diffuse N losses.
- The darkest purple areas (PIP rank 1) show the farmland with the highest risk for diffuse N losses.
- Lighter colours indicate lower risk land for diffuse N loss
- High risk areas often coincide with free draining land



PIP map for Nitrogen. Source EPA and OSI

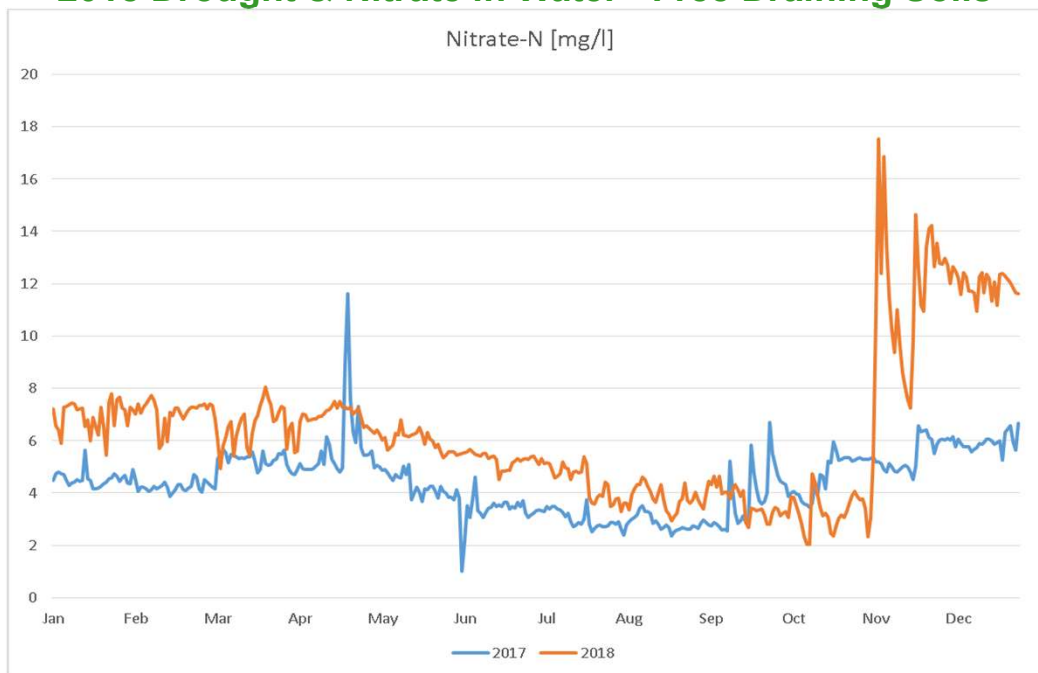
24

## N Mitigation Measures

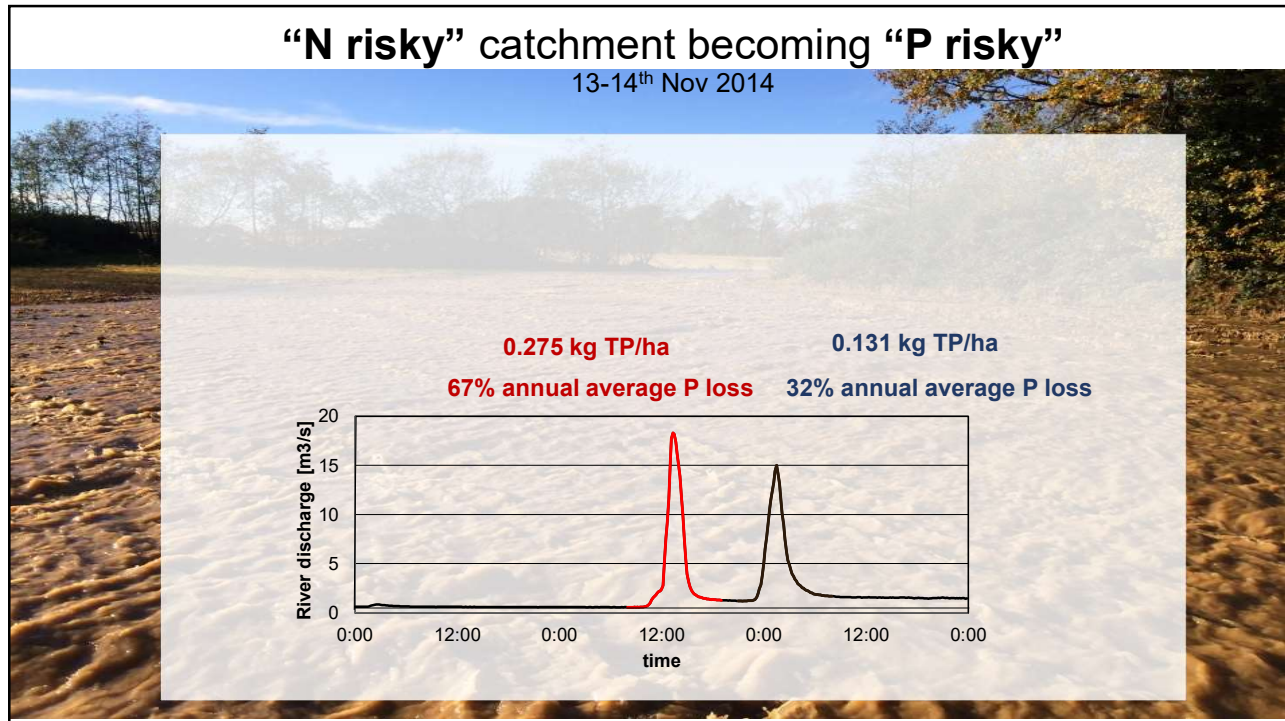
- **Right Rate of Application**
  - Apply in accordance with crop requirement
  - Apply in accordance with growth rates
- **Right Timing**
  - Shoulder periods of the year is where greatest quantities of nitrate is lost
  - Apply when plants are actively growing
  - Spring & Summer vs. Early Spring & Autumn applications
  - Weather
  - Need to focus on improving N use efficiency – 20 to 25% currently
- **Right Location**
  - Suitable fields & crops
  - Soil fertility – pH, P & K at optimum levels
- **Tillage**
  - Green cover/catch crops , timing of sowing important to improve effectiveness
  - Spring cultivation (crops & re-seeding) reduces nitrate leaching

25

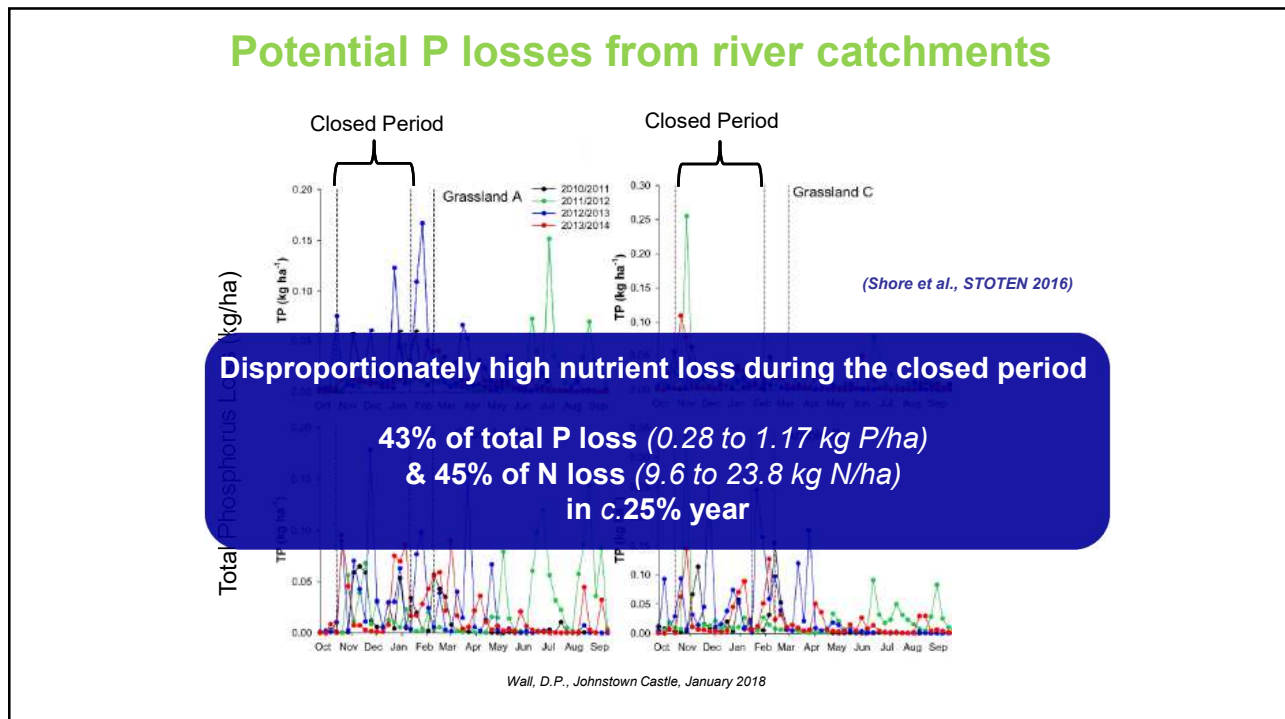
## 2018 Drought & Nitrate in Water - Free Draining Soils



26



27

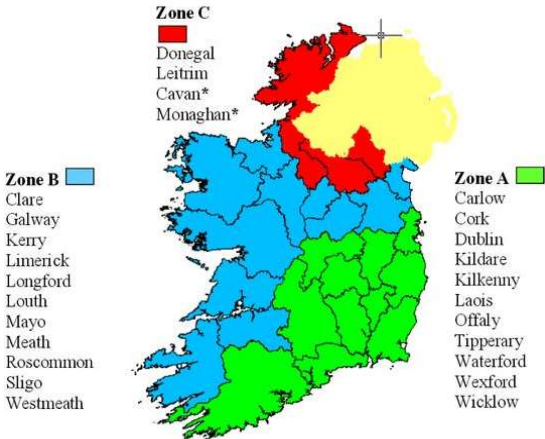


28

Prohibited Periods for Spreading				
Fertiliser Type	Closed Period	Closed	Closed	Closed
	Start Date All Zones	Period End Date Zone A	Period End Date Zone B	Period End Date Zone C
Slurry	15 <sup>th</sup> Oct to	12 <sup>th</sup> Jan	15 <sup>th</sup> Jan	31 <sup>st</sup> Jan
Farmyard Manure	1 <sup>st</sup> Nov to	12 <sup>th</sup> Jan	15 <sup>th</sup> Jan	31 <sup>st</sup> Jan

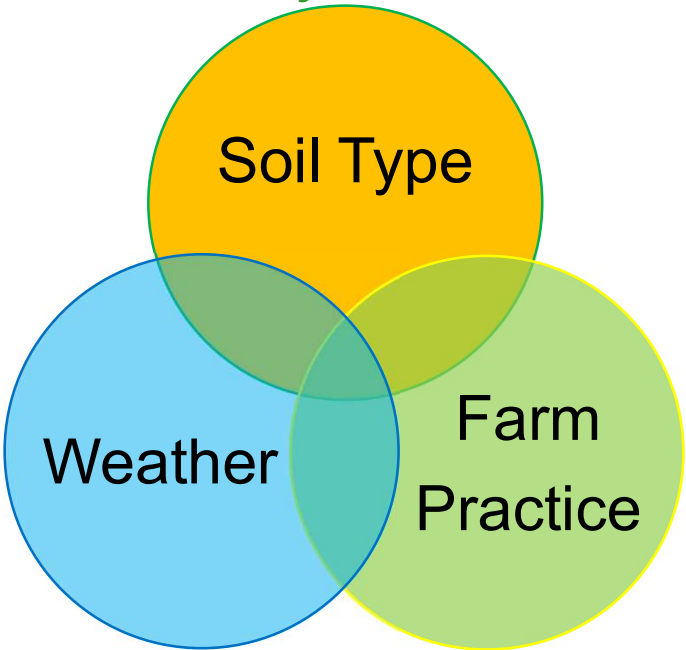
Buffer Zones for Organic Manure Spreading	
Water body / Feature	Slurry or FYM
Water Supply > 100m <sup>3</sup> or > 500 people	200m
Water Supply > 10m <sup>3</sup> or > 50 people	100m
Water Supply < 10m <sup>3</sup> or < 50 people	25m
Lake shoreline	20m
Exposed cavernous or karstified limestone features (e.g. swallow holes)	15m
Any surface watercourse where the slope towards watercourse is >10%	10m
All other surface waters	5m* 10M near closed period*

29

### Summary on Water Quality

- Water quality is declining
- Main issues
  - Diffuse P and sediment losses
  - Diffuse N losses
- N and P contrast significantly
  - Where they come from
  - How they are carried
  - Where they have an impact
- **Soil Type, Weather and Farm Practice** all influence water quality
- Point sources are still an issue
  - Easy to identify and fix but socio economic factors ?



30



Thank you



Questions?