



Contextualisation of Groundwater Monitoring Detections of Plant Protection Products: Observations from Site Elucidations

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Public Monitoring Data Collection and Evaluation

Purpose of Public Environmental Monitoring Data Collection

Annex I Renewal. Readily available monitoring data to support Annex I renewal (EC 283/2013).

Regulatory Requests. Address/respond to specific requests from regulatory agencies.

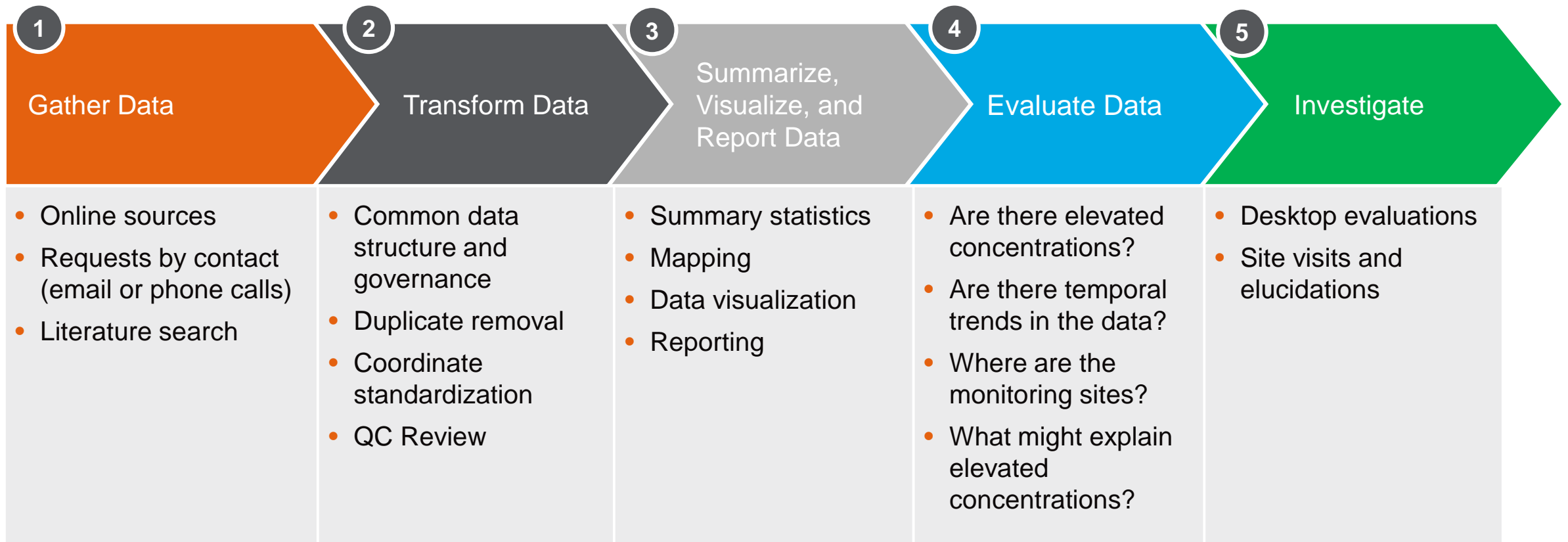
Surveillance. Proactive collection and evaluation of monitoring data to support decision making and increase stakeholder awareness.

Environmental Stewardship. Evaluate success of stewardship programmes e.g., Emission Reduction Plans, BMPs, and inform environmental stewardship programs.

Refine Monitoring Requirements. Assess impact to water resources in areas with vulnerable environmental settings and high pressure of use.

Benchmarking. Evaluation of other active substances and comparison to known groundwater contaminants.

Data Gathering and Evaluation

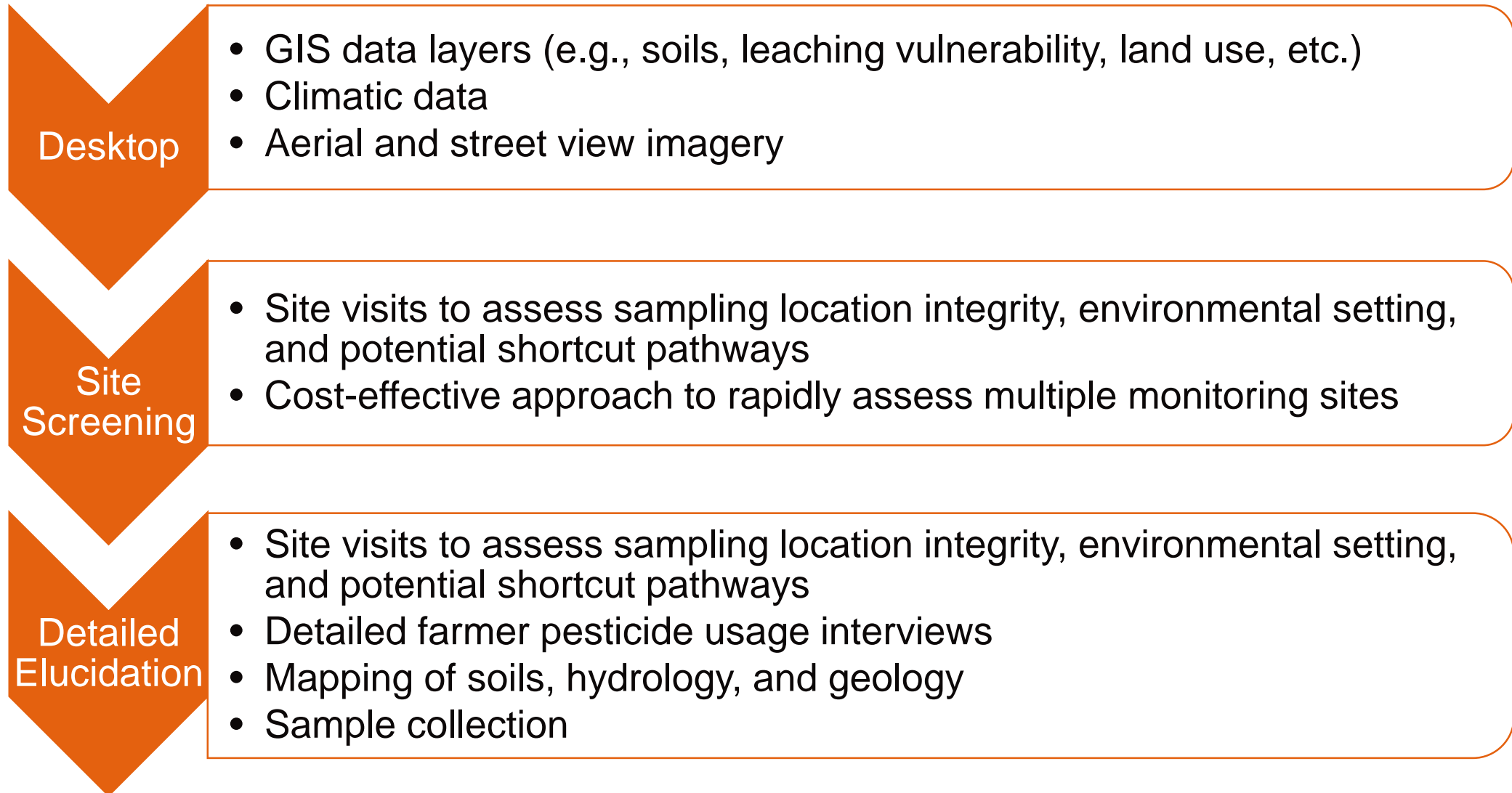


Summary of Data Collection Experience

Data Search & Gathering	Total Number of Compounds:	>200	Active substances, metabolites, other chemicals
	Total Number of Countries:	30	EU-27, UK, Switzerland, and USA
	Total Number of Media:	7	Groundwater, surface water, sediment, soil, air, precipitation, drinking water
	Total Number of Key Sources:	80+	Environmental authorities, ministries, institutes, river basin districts, etc.
	Total Number of Other Sources	>100	Secondary sources
Data Transformation	Number of Datasets	>300	Wide variety
	Number of Data Files	>1,600	Excel, CSV, Access, SQL, HTML, PDF, APIs, etc.
	Total Number of Reported Results:	>13 Million	Compiled, summarized, reported, or delivered
	Total Number of Results:	>34 Million	Internal SQL database of processed data
Summarize and Report Data	Total Number of Reports	~40	Non-GLP and other summary documents
	Number of Dashboards/Other	7	Data presentation, contextualization, vulnerability assessments

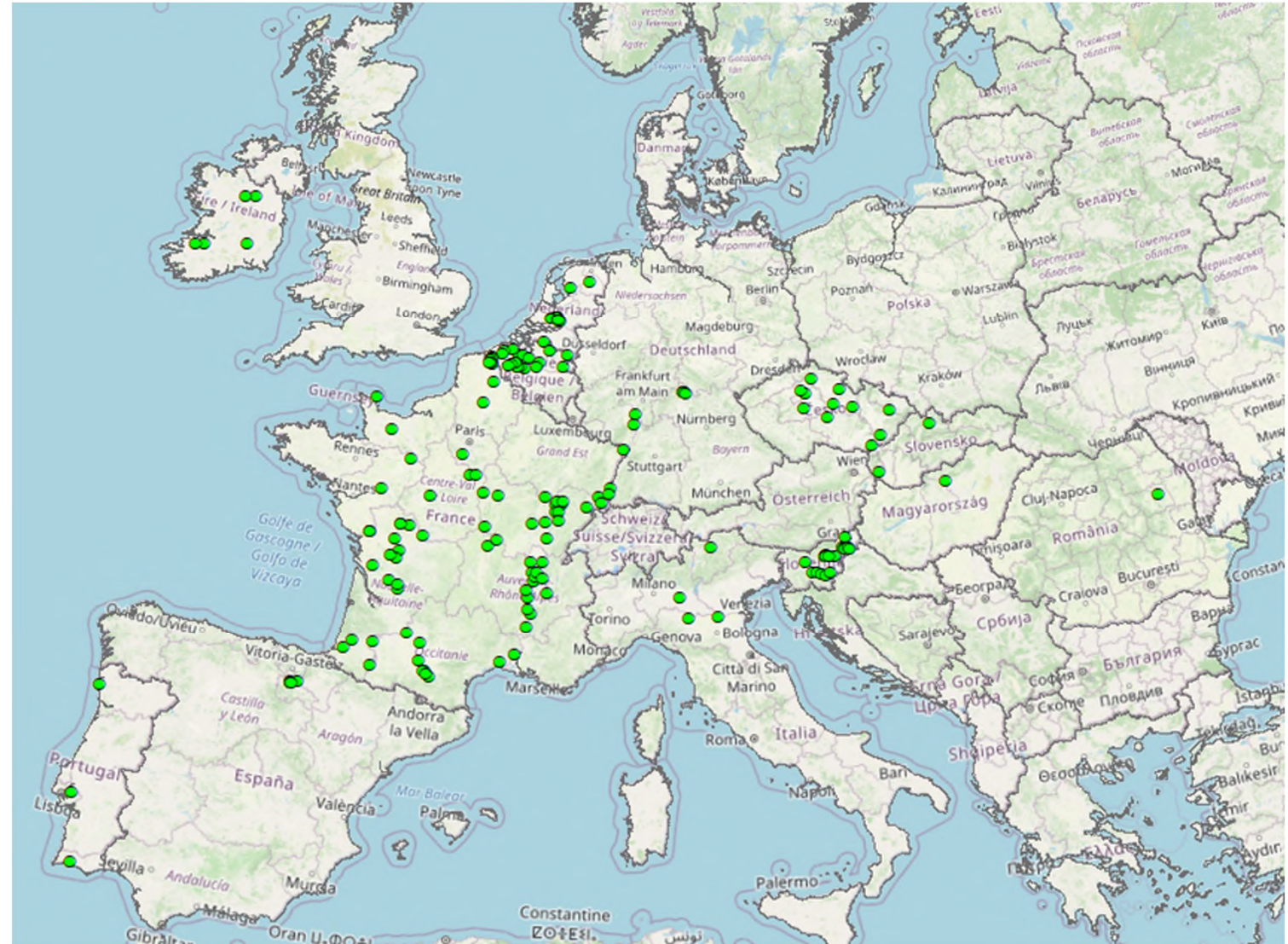
Site Elucidations

Elucidation Approaches



Site Elucidations

More than **130** groundwater site-specific elucidations across Europe



Site Screening/Detailed Elucidation Approach

- Evaluate sampling location for quality, integrity, and suitability for sampling.
- Obtain well construction details, boring logs, groundwater depth data, sampling and analytical data, and local historical weather data.
- Evaluate surrounding area (100 m) for surface water bodies, slope, nearest agricultural field, mixer load locations, slurry pits, erosion/runoff, drainage features, open wells, conduits etc.
- Compile analytical results for other constituents to assess temporal trends, correlations amongst analytes, and magnitude of residues.
- Compile observations, photos, maps, analytical results into detailed site-specific reports.
- *Delineate groundwater catchment, estimate groundwater flow direction, flow velocity/horizontal travel time, generate hydrogeology and geology maps.*
- *Interview farmers within catchment or 1,000 m radius of monitoring location to capture pesticide use history and agronomic practices for last 5-years.*
- *Collection of additional samples (e.g., soil, groundwater).*

Leaching Pathway Classification

- Data and observations from groundwater monitoring sites with elevated detections or exceedances assessed for shortcut/non-leaching pathways

Category	Observations
High	Clear evidence and strong level of confidence
Medium	Some, but not conclusive/consistent evidence
Low	No evidence

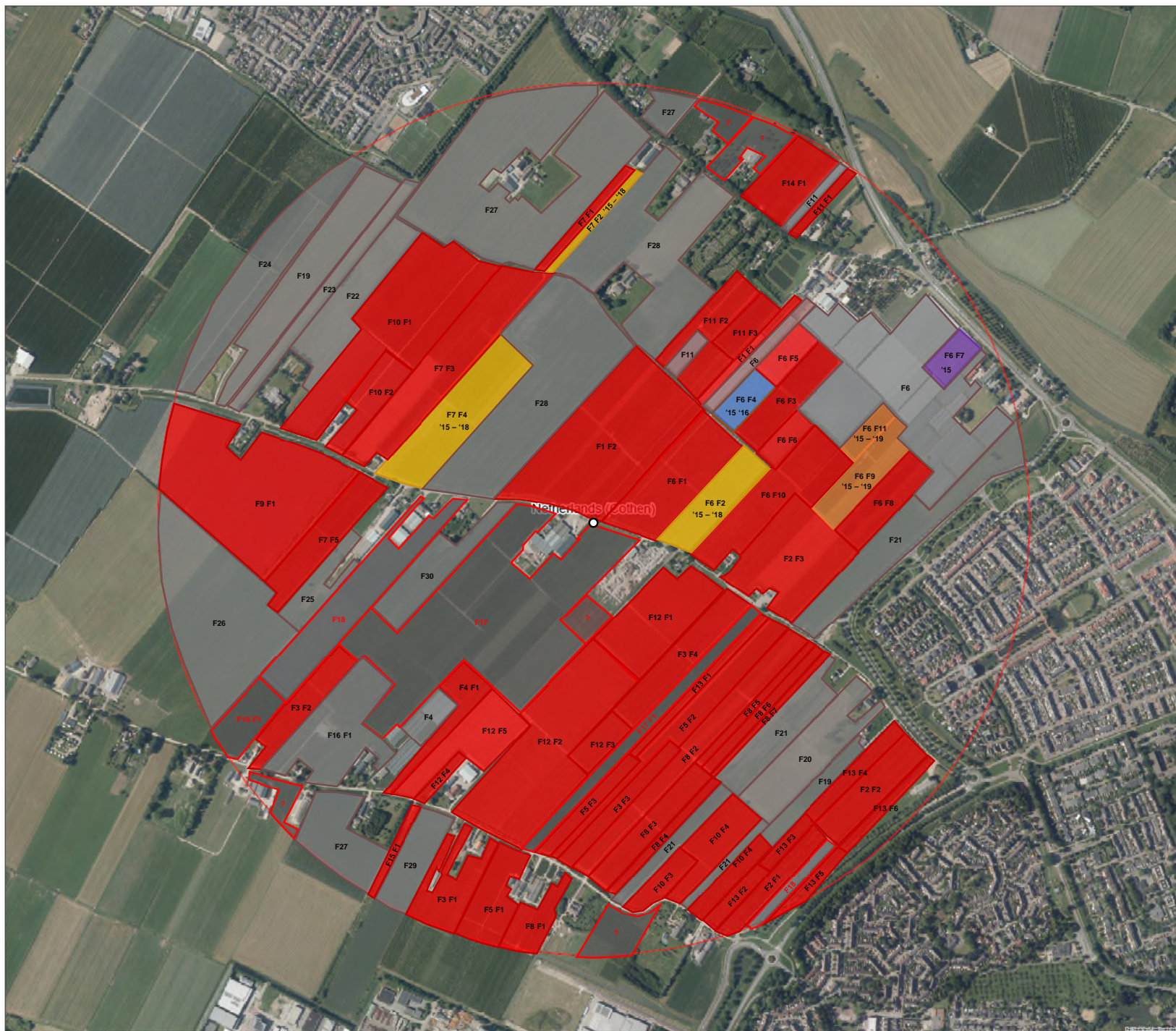
Observations and Findings



Example Groundwater Monitoring Locations



Example Usage Map



- No cooperation/unknown application
- No application
- Application: 6 years (2015 – 2020)
- Application: 5 years
- Application: 4 years
- Application: 3 years
- Application: 2 years
- Application: 1 year
- Monitoring well



opdrachtgever:

Status: final map
 Date: November 5th 2020
 Scale: A0 1:3.000
 Team Arcadis Nederland B.V.
 N. Erisman
 J. van Heck
 J. Wesseling

0 50 100 150 200 250 m

projectnummer	tekening	versie
	1	1

Observations and Findings

- The quality and integrity of sampling locations varied significantly.
- Approximately 30% of site elucidations performed revealed clear evidence of shortcut/non-leaching pathways.
- Approximately 40% of site elucidations performed revealed no clear evidence of any shortcut/non-leaching pathways

Category	Total Number*	Shortcut/non-leaching Pathway
High	37	Clear evidence and strong level of confidence
Medium	32	Some, but not conclusive/consistent evidence
Low	52	No evidence

*121 sites with groundwater detections or exceedances

Sites in “High” Category – Strong Evidence of Non-Leaching Pathways



Total Number	Observation Type
20	Well integrity / quality
9	Point source
8	Groundwater/surface water interaction



Conclusions

- Publicly available monitoring data for active substances and their metabolites can provide important insight and knowledge about their leaching potential under actual use conditions.
- Site elucidations highlighted several complex issues impacting the quality of groundwater in the vicinity of the sampling locations.
- Approximately 30% of site elucidations performed revealed clear evidence of shortcut/non-leaching pathways.
- Findings from the site elucidations demonstrated the need to assess the utility and quality of public monitoring data generated.

Thank You

