

**Colombian-French Conference
on Urban Water Systems**
1st December 2017



Operation and Maintenance of SUDS in Lyon, France

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Opération and Maintenance of SUDS in Lyon, France

The metropolis of Lyon, France



1 333 032

INHABITANTS
living in 59 municipalities

3 250 KM

SEWER
1 841 km combined sewer
449 km stormwater



12
WASTEWATER
TREATMENT PLANTS

265

DETENTION or INFILTRATION
STORMWATER BASINS

2 500 SOAKAWAYS






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Context

- Sewer system
 - Combined sewer (85%)
 - Partially saturated
 - 21 July 2015 decree: limits the combined sewer overflowing

↑ Infiltration basin in Décines, March 2016

↑ Swale, Garibaldi Street in Lyon, June 2016

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Problem

- Since 1990, SUDS to:
 - limit flooding and discharges
 - recharge water tables
 - cool the city
 - improve living conditions
- Yet, **reluctance** to SUDS adoption persists
- Thesis within the frame of the “Permeable City” Project: rank and analyze barriers

Operation and maintenance

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Questions

OTHU
www.othu.org

- How are stormwater assets maintained?
- By who?
- What are the main difficulties?



↑Soakaway in Lyon, March 2015

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Field workshops: first findings

OTHU
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Stormwater detention ponds - Portes des Alpes - Saint-Priest, Lyon, France

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How are stormwater assets maintained?



- Opération and Maintenance of SUDS in Lyon, France
- Main results of fields workshops
 - Some SUDS receive very little (hydraulic) maintenance
 - But lots of them are still well functioning
 - Main difficulties regarding SUDS O&M:
 - Demarcation issues: tasks, costs and responsibilities
 - Knowing what, where, how?
 - Unhappy sewer workers?
- “On-the-job” immersions with maintenance teams

Anthropological approach

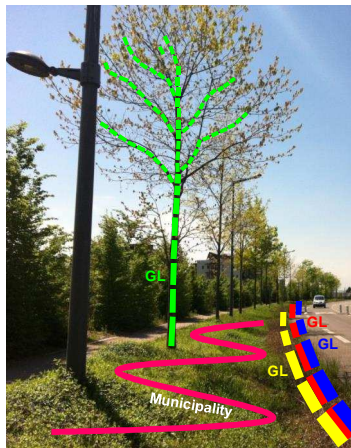


- Inductive procedure
- Participant observation
- Learn about what is "not said"

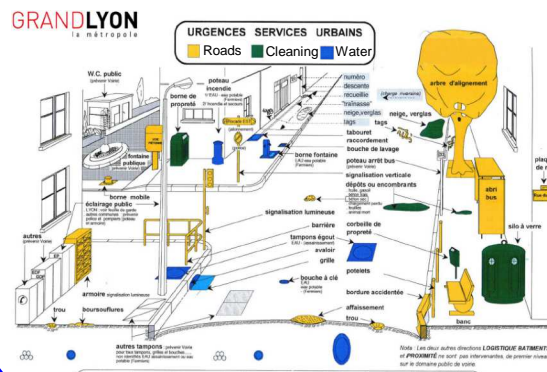
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Who is operating and maintaining SUDS?



↑Roadside in Bron (Lyon, France), April 2015



Une anomalie se produit sur un des éléments ci-dessus !... Qui prévenir pour l'intervention ?
REPOSE : La direction repérée par sa couleur

- Key:** maintenance and/or control
- █ Green spaces department (municipality)
 - █ Roads direction – Trees and Landscape department
 - █ Cleaning department
 - █ Roads department
 - █ Sanitation department

Metropolis of Lyon
 (« Great Lyon »)

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Who is operating and maintaining SUDS?



- SUDS O&M complexity
 - List of tasks for each type of SUDS
 - Nature of tasks: specialty or not
 - Department in charge
 - **S**=Sanitation Dptmt, **G**=Green Spaces Dptmt



↑ Cleaning of a screen inside the sewer, March 2016



↑ Mowing in Confluence, Lyon, France, May 2016

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| | | Cleaning Department | Sanitation Department | Green Spaces Service | Roads Direction |
|-------------------|----------------------------------|---|---|---|--|
| Soakaways | | C1 Surface and storm drains cleaning (when needed) | | - | - |
| Soakage trench | | | | - | - |
| | grassy | C1 C2 Trash collection (depending on dirt and requirement) G1 Mowing (1 to 4 times/yr) | S1 Hydraulic structures maintenance (when needed) + | | |
| Swales | vegetated (herbs, shrubs, trees) | C1 C2 | S2 Hydraulic structures cleaning or flushing (when needed) | C2 / G1 G2 Pruning (about 1 to 2 times/yr) G3 Weeding (when needed) G4 Watering | S2 |
| Buried basins | | C1 | S1 | - | - |
| Open-air basins | enclosed | - | S1/S2/C2/J2 V1 Fences and signs maintenance S3 Self-monitoring | 1 st adv. for centralized systems : simple O&M (MicroMégas) | |
| | open to the public | C1 C2 | S1/S2/S3 | | C1/C2 G1/G2/G3/G4 |
| Pervious pavement | | C1 / G3 R2 Pavement maintenance | - | - | R1 Pavement repair R2/S2 |

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| Buried basins | | C1 | S1 | - | - |
| Open-air basins | enclosed | - | S1/S2/C2 V Fences and signs S Self-monitoring | "Picking up waste, I am telling you this honestly, I don't want to do it" | |
| | open to the public | C1 C2 | S1/S2/S3 | C1/C2 G1/G2/G3/G4 | - |
| Pervious pavement | | C1 / G3 R2 Pavement maintenance | | "It was made in 1999-2000. I think it was only once cleaned up" S2 pair | |

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"Sometimes it's easier to say we'll pull a new sewer line, we won't have issues with hand over"

What are the main difficulties for SUDS O&M?



- Complex demarcation of tasks
- Lack of systematic rules:
 - who does what?
 - who is responsible for what?
- Needs for
 - a better management of “unusual tasks”
 - an improvement in asset management (what, where, how)
- General context
 - Increase in the number and the complexity of stormwater facilities
 - Stagnating or decreasing functioning budgets

Nevertheless...



- Lots of SUDS are well functioning
- Basic tasks (cleaning, mowing) are done (most of the time)
- An important work has been undertaken to improve O&M considerations in urban design



GRANDLYON
la métropole



**PROJET
VILLE
PERMÉABLE**
Comment réussir
la gestion des
eaux pluviales
dans nos
aménagements ?

*“Permeable City”
Guidelines for
urban designers*



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Thanks!

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Photographs and illustrations : N. Cossais

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