



Enabling Transboundary Cooperation and Integrated Water Resources Management in the Dniester River Basin

Research of the Tailings Management Facilities Current State in the Dniester River Basin 2018-2019

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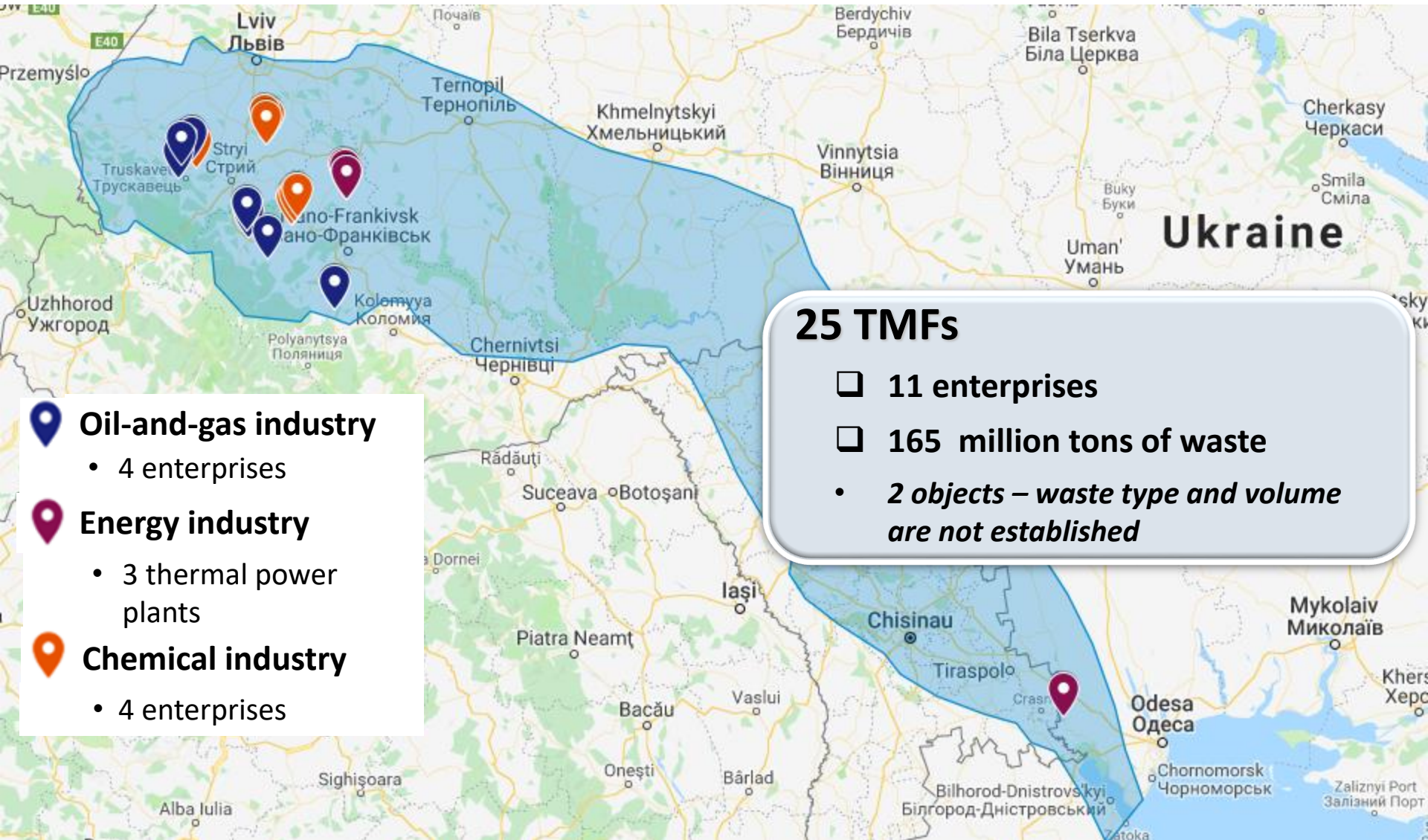
CONTENT

- I. Research of Tailings Management Facilities (TMFs) 2018-2019**
- II. Social and economic issues**
- III. National and European legislation**
- IV. Recommendations**

TMFs of Ukraine 2018



TMFs in the Dniester River Basin 2018



TMFs RESEARCH IN THE DNIESTER RIVER BASIN

IDENTIFICATION

determination of the TMFs' existence within the basin and the type of stored waste

INVENTORY

comprehensive assessment of TMFs safety operation level
and environmental impact

Research ways

- visual observations - site visit
- analytical method - desk review

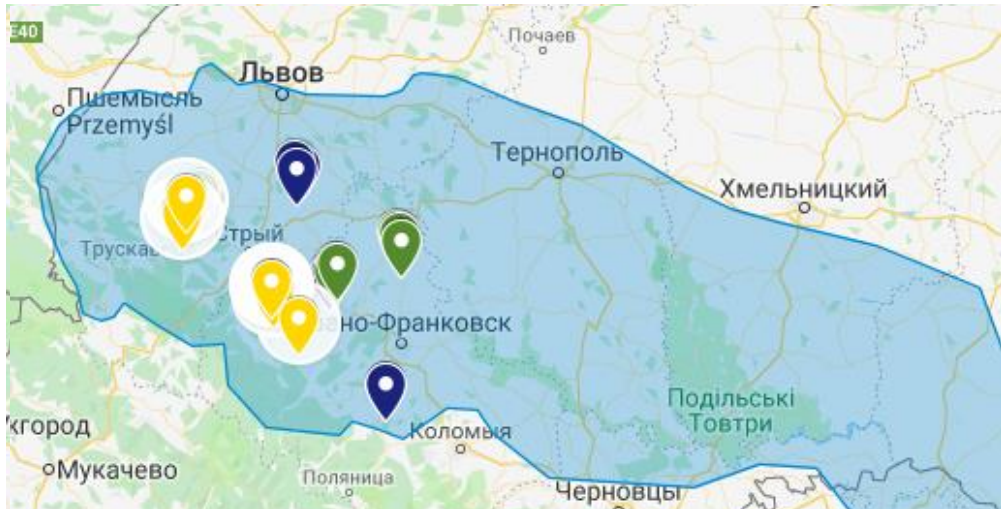
Safety criteria


- **TMFs European standards**
- **National legislation**

Recommendations to the Dniester River Basin Management Plan

RESEARCH STATUS

TMFs in the Dniester River Basin 2018



-  Identification
✓ 7 objects
-  Inventory (site visit)
✓ 9 objects
-  Inventory
✓ 9 objects

Identification

Lviv oblast

oil and gas extraction enterprise

1 sludge waste facility

owner not set

1 waste facility

Ivano-Frankivsk oblast

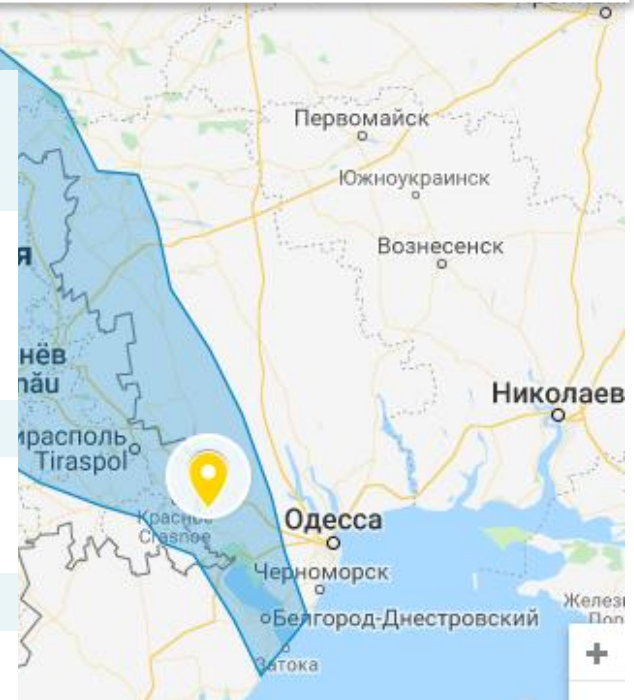
oil and gas extraction enterprise

4 waste facilities (storage ponds)

Odessa oblast

thermal power plant

1 ash dump



INVENTORY (SITE VISIT)

4 ENTERPRISES, 9 TMFs

Lviv oblast

Oil refinery	2 sludge waste facilities
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Ivano-Frankivsk oblast

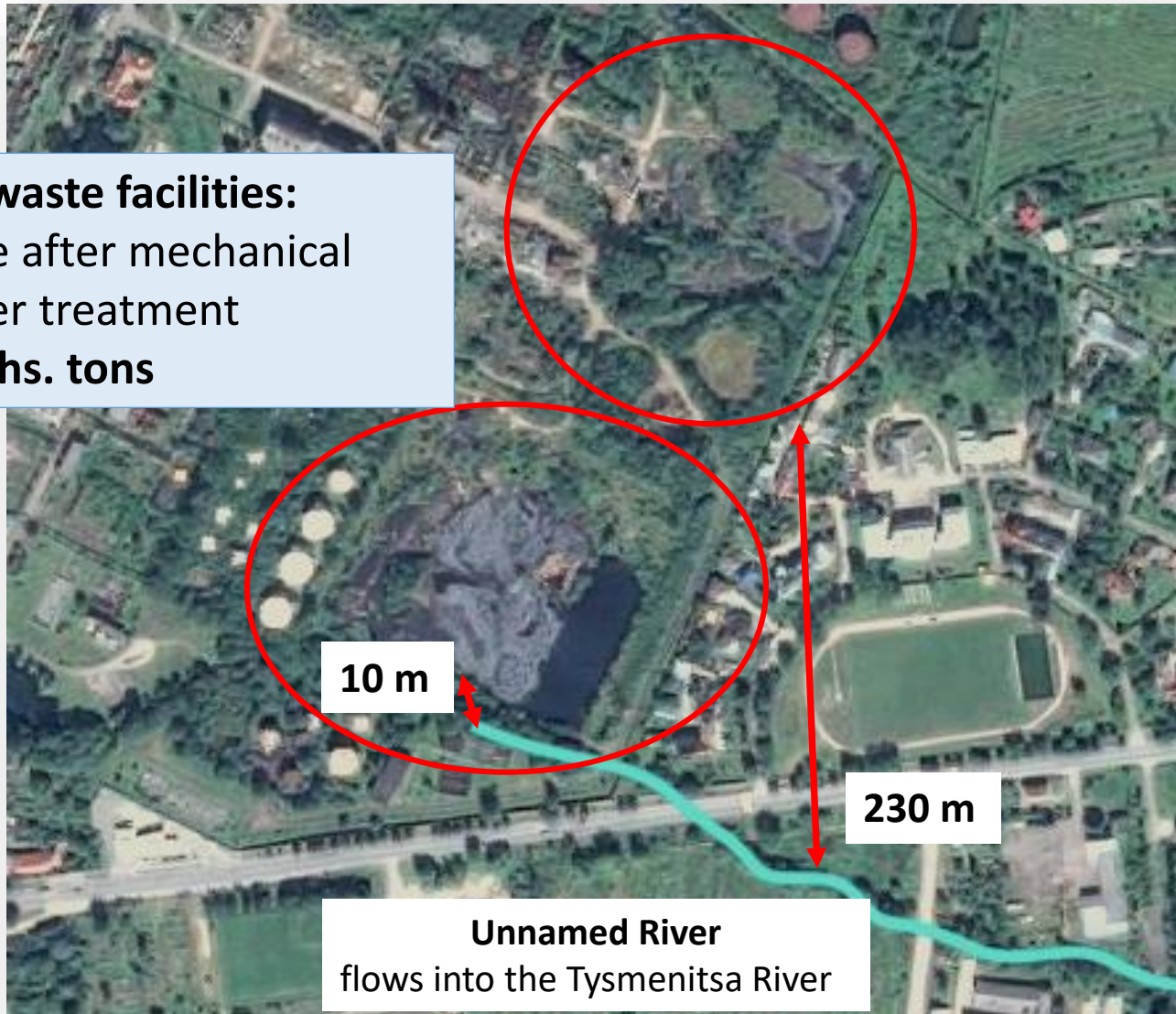
Enterprise producing petrochemical products	2 sludge waste facilities
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Combined heat and power plant	1 ash dump
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Thermal power plant	4 TMFs
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1. OIL REFINERY

2 sludge waste facilities:
- oil sludge after mechanical
wastewater treatment
Total: 31 ths. tons



TMFs location in relation to the hydrographic network

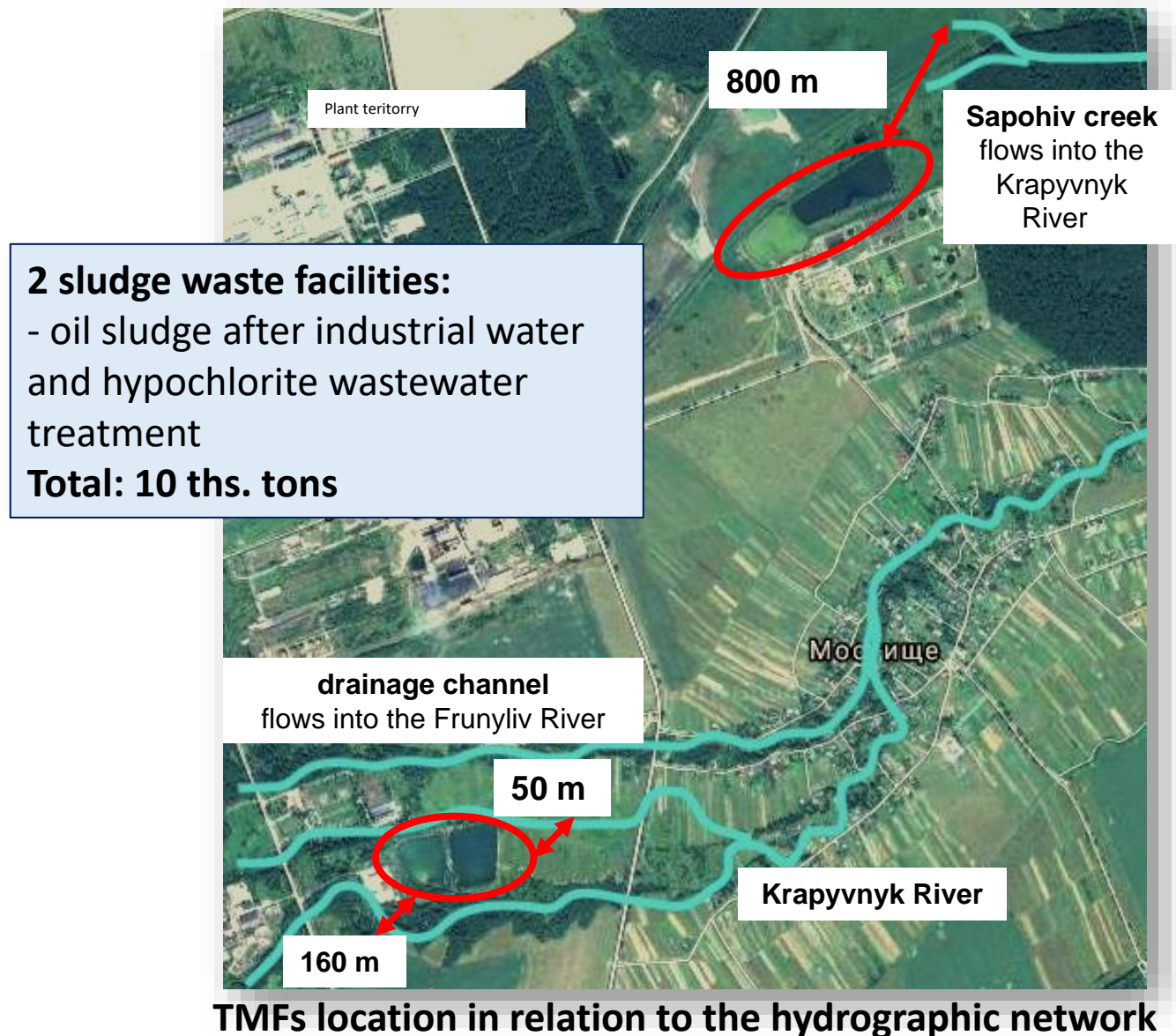
1. OIL REFINERY

INVENTORY (SITE VISIT) RESULTS

Key recommendations

1. Technical inspection - to find out and remove the causes of leaks, underflooding and groundwater pollution by oil-products
2. Clearing of the land affected by oil refining waste, soil survey and rehabilitation
3. Dam arrangement (prevention of overflows and spills)
4. Project design and further rehabilitation of all sludge waste facilities

2. ENTERPRISE PRODUCING PETROCHEMICAL PRODUCTS



2. ENTERPRISE OF PETROCHEMICAL PRODUCTS PRODUCTION INVENTORY (SITE VISIT) RESULTS

Key recommendations

1. Observation wells arrangement to monitor the groundwater contamination
2. TMFs certification and scheduled surveys
3. Drainage system (treatment facilities are threatened by underflooding)

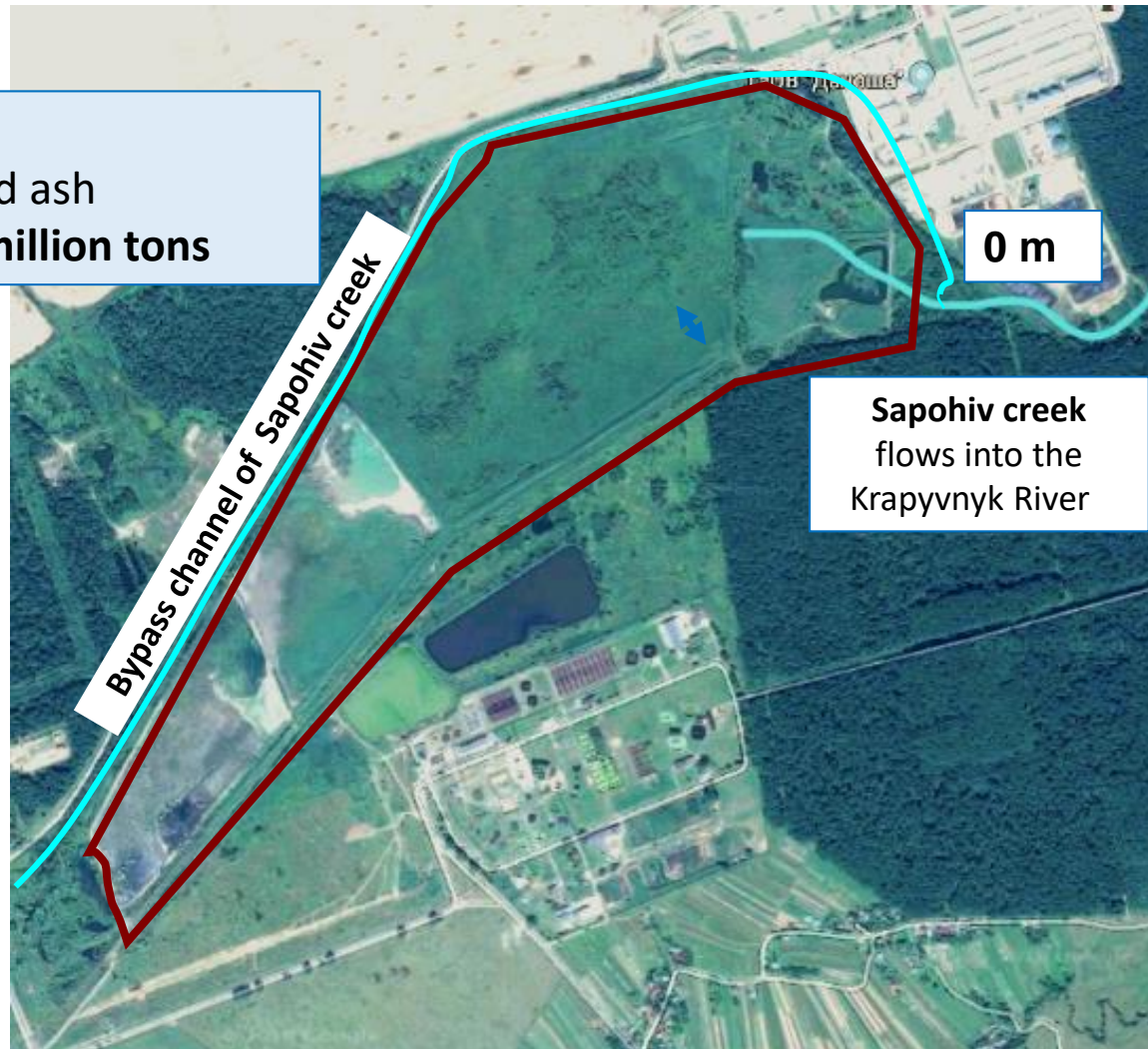


3. COMBINED HEAT AND POWER PLANT

1 ash dump:

- fuel slag and ash

Total: 2.24 million tons



TMF location in relation to the hydrographic network

3. COMBINED HEAT AND POWER PLANT INVENTORY (SITE VISIT) RESULTS

Key recommendations

1. Creating an environmental service/department
2. EIA for ash dump reconstruction project
3. Dust suppression activities
4. Waste reuse and recycling

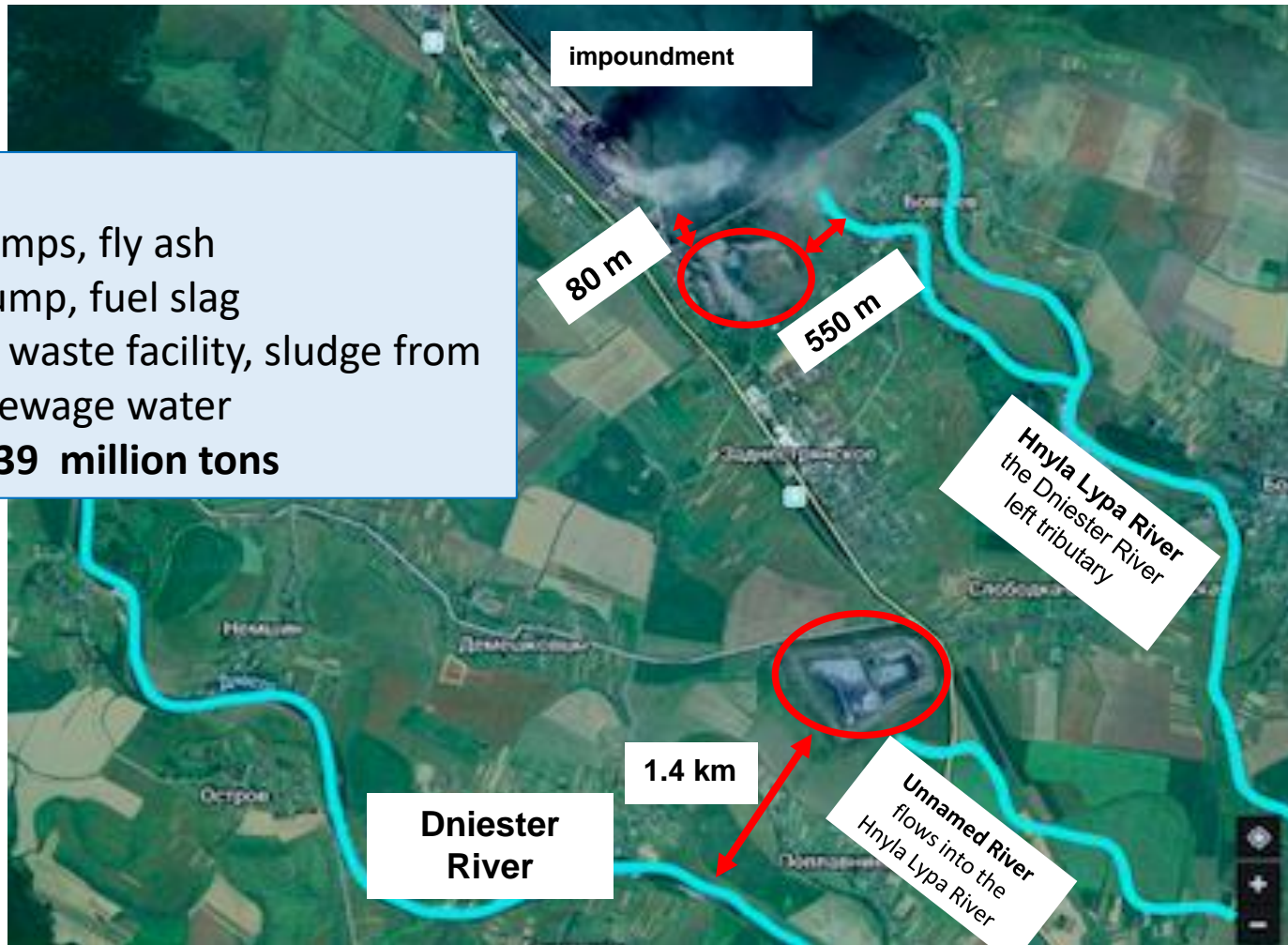


4. THERMAL POWER PLANT

4 TMFs:

- 2 ash dumps, fly ash
- 1 slag dump, fuel slag
- 1 sludge waste facility, sludge from clarified sewage water

Total: 40.39 million tons



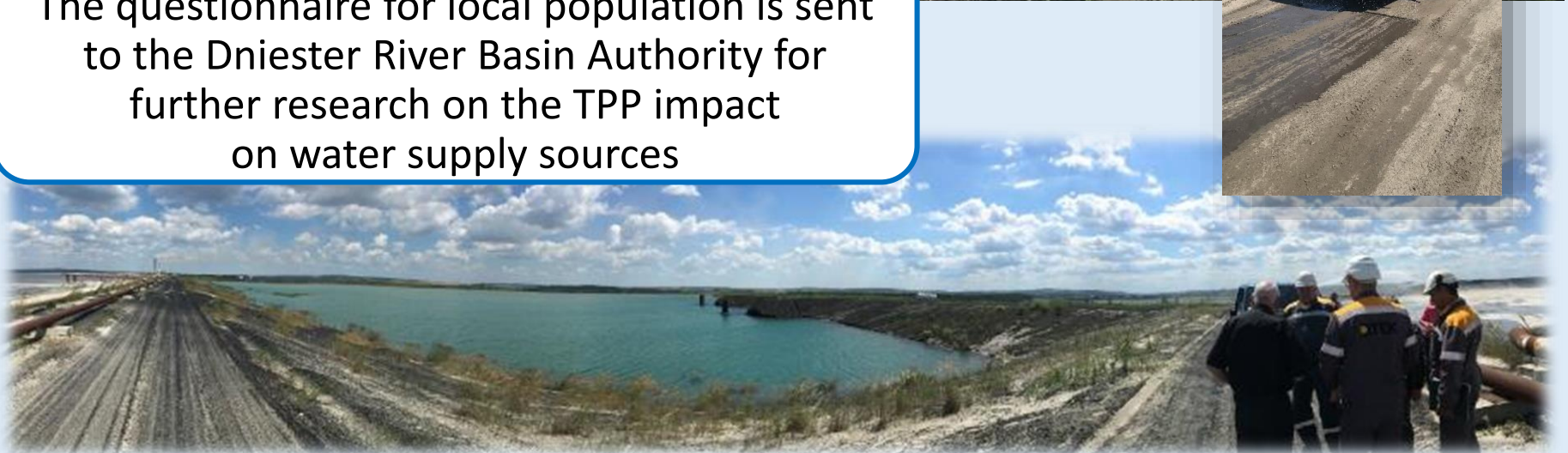
TMFs location in relation to the hydrographic network

4. THERMAL POWER PLANT

INVENTORY (SITE VISIT) RESULTS

1. Conduct the research on intensive dusting, including the spread of dried aluminosilicate microspheres, as a threat to the surface water bodies and public health
2. Waste recycling and reuse measures development to release vast areas of agricultural lands

The questionnaire for local population is sent to the Dniester River Basin Authority for further research on the TPP impact on water supply sources



INVENTORY

4 ENTERPRISES, 9 TMFs

Ivano-Frankivsk oblast

Oil refinery	2 sludge waste facilities
Potash and magnesium ore mining and processing plant	3 TMFs

Lviv oblast

Potash ore mining and processing plant	1 TMF
Sulfur ore mining and processing plant	3 TMFs

INVENTORY

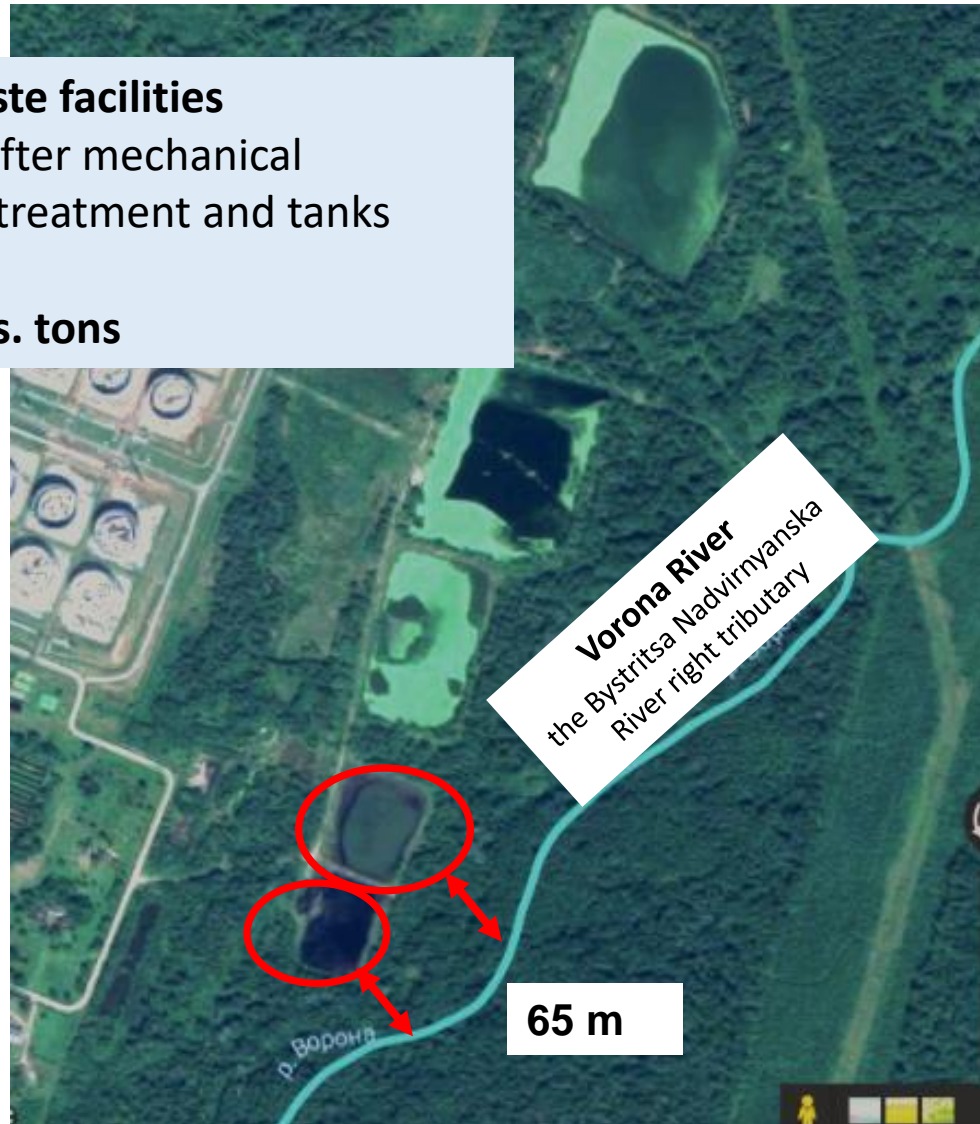
Oil refinery
2 sludge waste facilities

1. OIL REFINERY

2 sludge waste facilities

- oil sludge after mechanical wastewater treatment and tanks stripping

Total: 7.5 ths. tons



TMFs location in relation to the hydrographic network

1. OIL REFINERY

INVENTORY RESULTS

Key recommendations

1. Clearing of the land affected by oil refining waste, soil survey and further rehabilitation
2. To find out the causes of intensive leaks, ensure the dam strength
3. The drainage system and observation wells arrangement
4. Operational documentation keeping (project design, monitoring procedures, emergency plan, TMF passport, potentially hazardous object passport, waste disposal site passport)

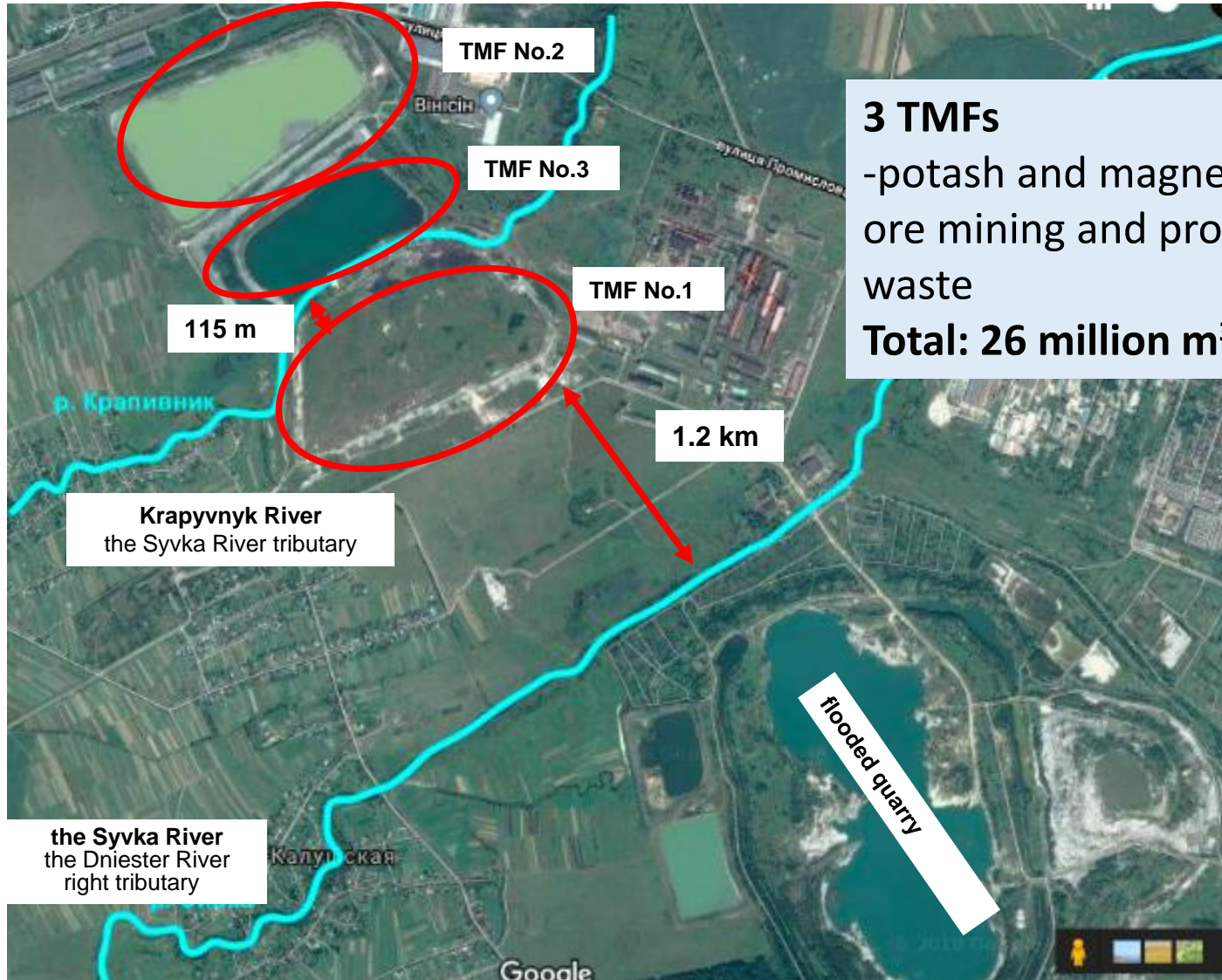


INVENTORY

Potash and magnesium ore mining and
processing plant

3 TMFs

2. POTASH AND MAGNESIUM ORE MINING AND PROCESSING PLANT



TMFs location in relation to the hydrographic network

2. POTASH AND MAGNESIUM ORE MINING AND PROCESSING PLANT flooded quarry



our
team



2. POTASH AND MAGNESIUM ORE MINING AND PROCESSING PLANT

TMFs



2. POTASH AND MAGNESIUM ORE MINING AND PROCESSING PLANT brines seepage



2. POTASH AND MAGNESIUM ORE MINING AND PROCESSING PLANT INVENTORY RESULTS

Key recommendations

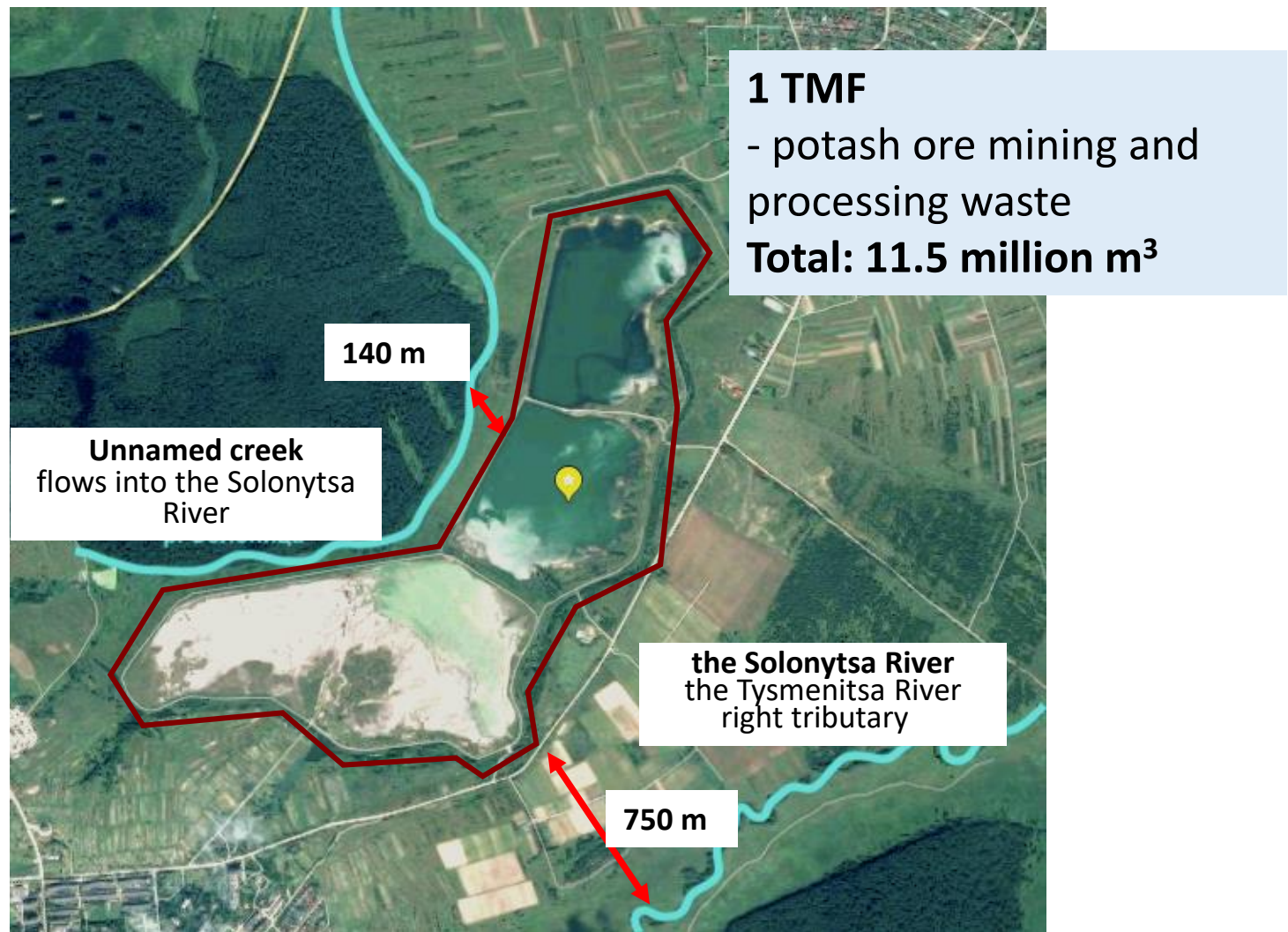
1. Measures on leaks removal, the dams strength and stability ensuring
2. Waste recycling, TMFs rehabilitation
3. The Syvka River, Krapyvnyk River and salinization of aquifers monitoring
4. Operational documentation keeping (project design, monitoring procedures, emergency plan, TMF passport, potentially hazard object passport, waste certification)



INVENTORY

Potash ore mining and processing plant
1 TMF

3. POTASH ORE MINING AND PROCESSING PLANT



TMFs location in relation to the hydrographic network

3. POTASH ORE MINING AND PROCESSING PLANT

TMF sections



3. POTASH ORE MINING AND PROCESSING PLANT

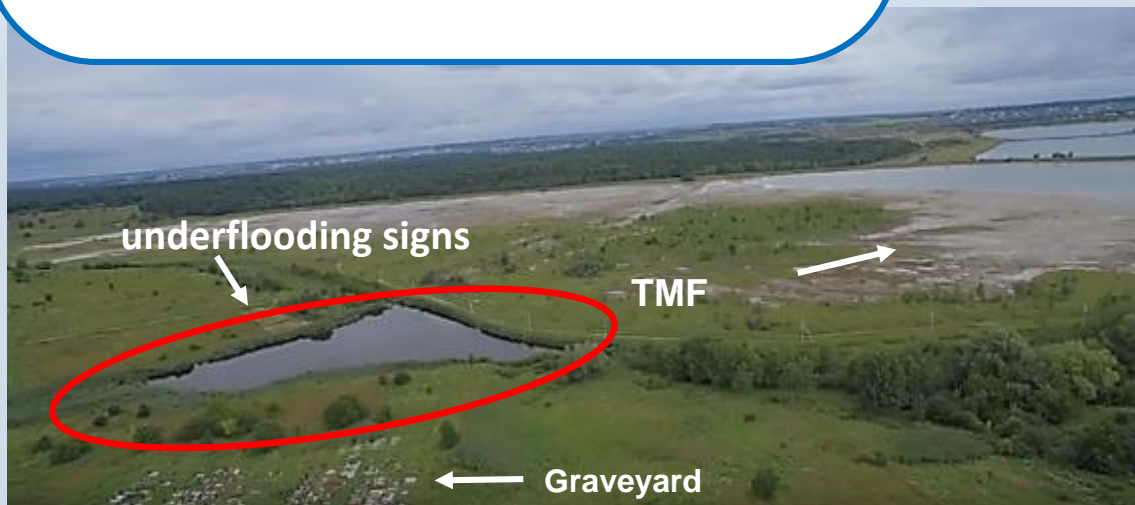
Karst sinkhole, September 2017



3. POTASH ORE MINING AND PROCESSING PLANT INVENTORY RESULTS

Key recommendations

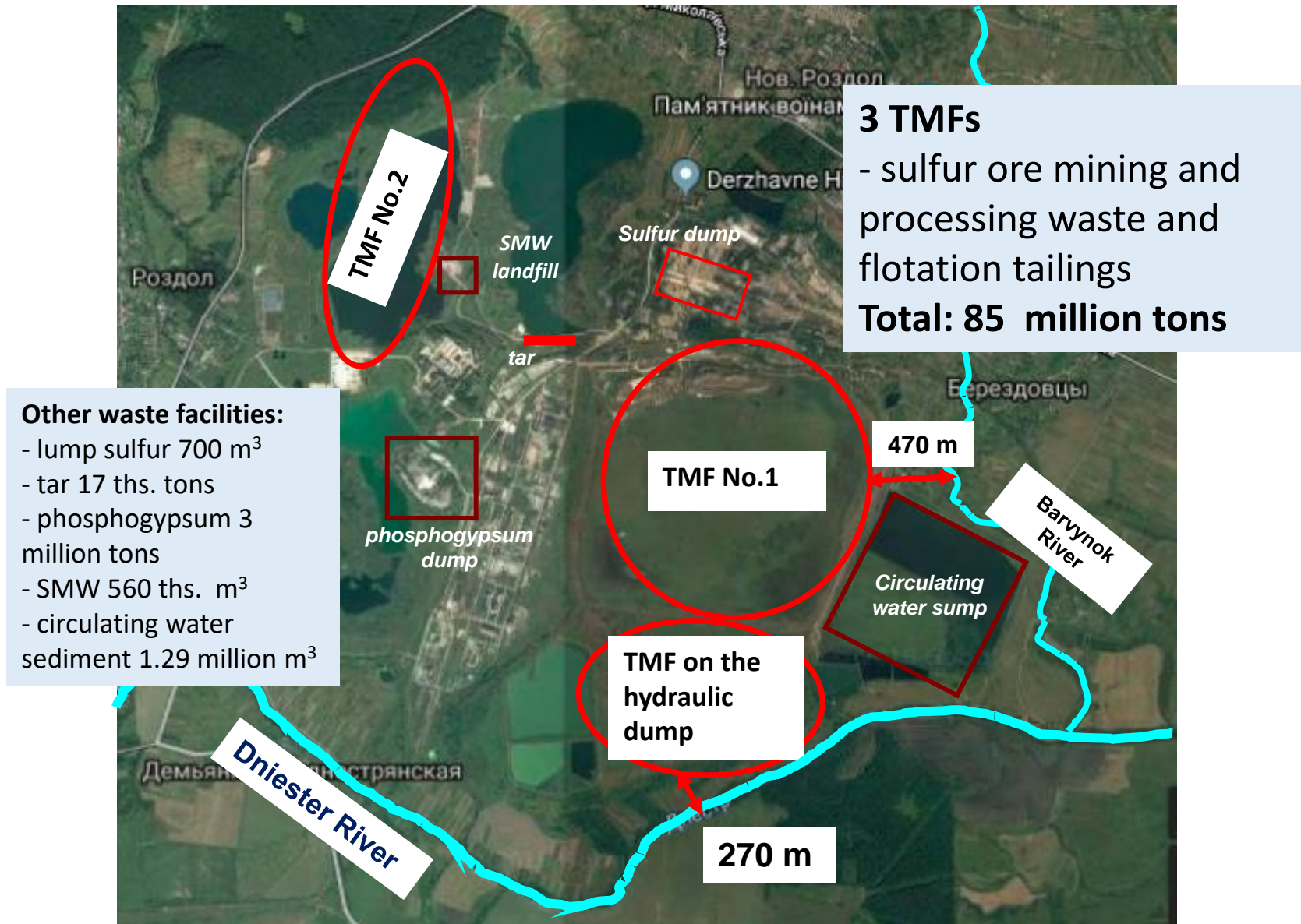
1. Clearing of TMF drainage system
2. TMF waste certification and accounting
3. Preventing the TMF overflow in case of intensive precipitations by pumping the brines



INVENTORY

Sulfur ore mining and processing plant
3 TMFs

4. SULFUR ORE MINING AND PROCESSING PLANT



TMFs location in relation to the hydrographic network

4. SULFUR ORE MINING AND PROCESSING PLANT

sulfur storage



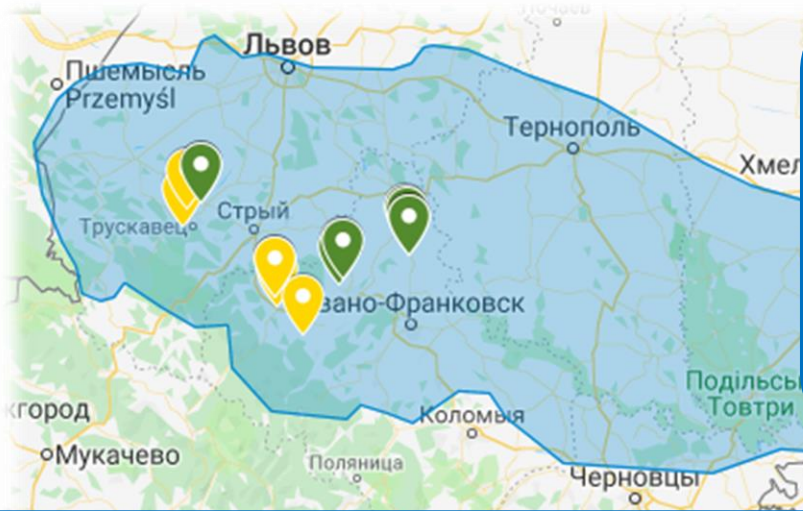
4. SULFUR ORE MINING AND PROCESSING PLANT INVENTORY RESULTS

Key recommendations

1. Strengthening the TMF's No. 1 dam
2. Sulfur storage and SMW landfill liquidation, tar residues disposal and further land rehabilitation
3. Completion of the drainage channel construction into the Dniester River and regular drainage system clearing
4. Construction of a sewage treatment plant
5. The observation wells arrangement and environmental monitoring
6. Operational documentation keeping



RESEARCH PLAN ON 2019



**Inventory
(site visit + desk review)**
4 enterprises, 7 TMFs

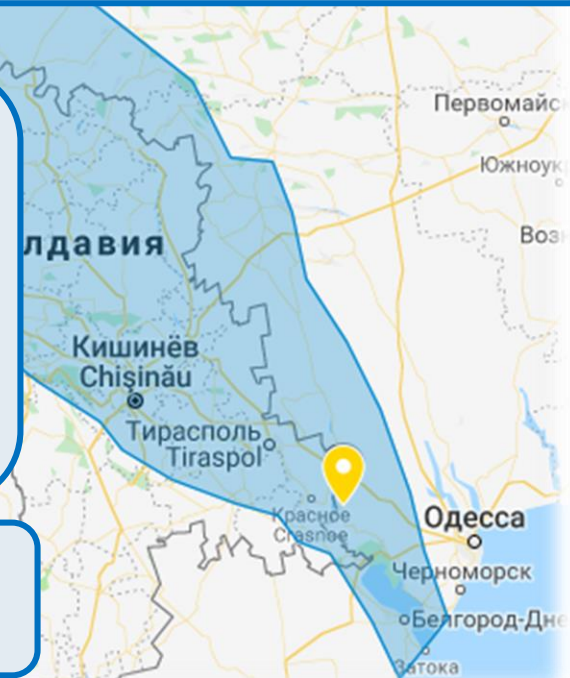
- Thermal power plant (Odessa oblast)
- 2 oil and gas extraction enterprises
- 1 object - unknown owner



**Inventory
(desk review)**
4 enterprises, 9 TMFs

- Oil refinery
- Enterprise producing petrochemical products
- Combined heat and power plant
- Thermal power plant (Ivano-Frankivsk oblast)

Updating the Ukrainian TMFs Database and map



II. SOCIAL AND ECONOMIC ISSUES

**Three enterprises of chemical industry
potash-magnesium, potash, and sulfur ore mining and
processing plants**

Problematics

- the debt growth on the privileged retirement allowances compensation for past periods
- the debt growth for charging TMFs land rent
- lack of funds for TMFs safety maintenance, conservation, closure and / or rehabilitation

II. SOCIAL AND ECONOMIC ISSUES

Solution

- To enact the Law of Ukraine “On Amendments to Certain Laws of Ukraine (regarding the privileged retirement allowances for certain persons' categories)” (Reg. No. 2632)
- to provide a privilege, or to suspend the land rent charge for environmentally hazard facilities for up to 5 years
- To engage the local and regional environmental funds implementing the measures on reducing the objects' environmental impact

III. NATIONAL LEGISLATION

TMFs SAFETY OPERATION

Laws of Ukraine:

- On the Environmental Protection
- On the waste management
- On high-risk objects
- Mining industry Law of Ukraine

Codes of Ukraine:

- Code of Civil Protection
- Code on mineral resources
- Water Code
- Land Code

Specific regulations

- **NPAOP 0.00-1.74-15.** Labor protection rules on tailings and sludge facilities operation of mining and nonmetallic enterprises
- **DBN B.2.4.-5:2012** «Tailings management facilities and sludge waste facilities. Part I. Design. Part II. Building»
- Hydraulic structures survey and certification methods of hydraulic extraction and industrial waste storage systems
- The Waste Disposal Sites' Register maintenance procedures, and others

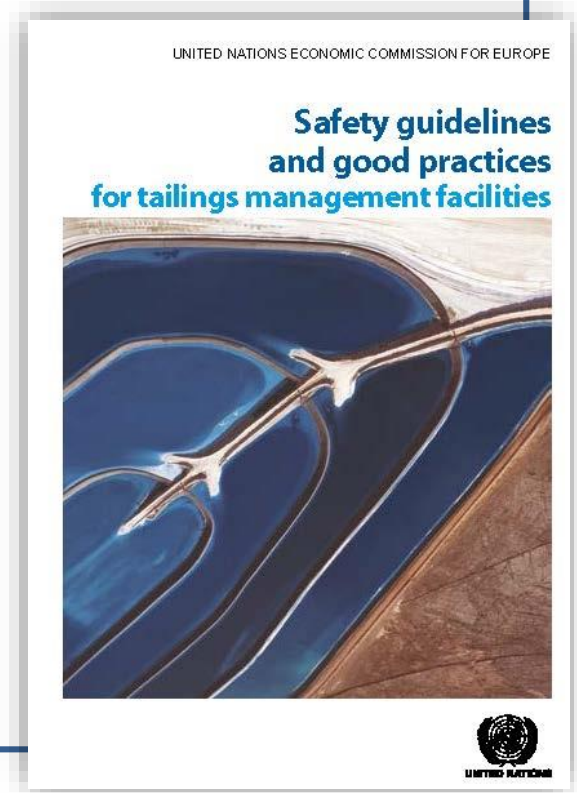
III. EUROPEAN LEGISLATION

TMFs SAFETY OPERATION

- Directive 2006/21/EC on the management of waste from extractive industries
- Directive 2012/18/EC on the control of major-accident hazards involving dangerous substances
- **UNECE** Safety guidelines and good practices for tailings management facilities



Methodology of comprehensive evaluation of the safety of multi-tonnage storages of liquid industrial waste



IV. RECOMMENDATIONS TMFS SAFETY AND ECONOMICALLY FEASIBLE OPERATION

LONG-TERM MEASURES

- **European legislation implementation**
Directive 2006/21/EC

Draft law development on the management of waste from extractive industries:

- Industrial waste management plans
- Environmental insurance
- Enterprise Investment Funds

- **Defining the strategy on waste recycling and use as secondary raw material**

technologies search, fund-raising, use in agriculture or construction

IV. RECOMMENDATIONS

TO THE DNIESTER RIVER BASIN MANAGEMENT PLAN

SHORT AND MEDIUM-TERM MEASURES

involving the regional and local authorities

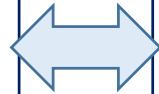
- proper record keeping on facilities, waste types and amount
- control the objects' technical state
- monitor the objects' impact
- plan the emergency response
- research the problematic objects' state, especially the public ownership ones

IV. RECOMMENDATIONS

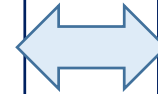
TMFS SAFETY AND ECONOMICALLY FEASIBLE OPERATION

**IMPLEMENTATION OF THE EUROPEAN STANDARDS
IN NATIONAL LEGISLATION**

**ENSURING THE SAFE
OPERATION BY THE
ENTERPRISE**



**REGULAR
ENVIRONMENTAL
MONITORING**



**REGULAR STATE
CONTROL ON
FACILITIES SAFETY**



**ENVIRONMENTAL
IMPACT MINIMIZATION**

**EMERGENCY SITUATIONS
PREVENTION**



Thank you for your attention!

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