

Annex1. Needs Assessment Questionnaire for Russian Federation

COUNTRY	RUSSIAN FEDERATION
NAME AND ADDRESS OF LABORATORY	Vladimir Centre of Hydrometeorology and Environmental Monitoring Service 600021 Vladimir, Streletskaja 20 Tel/Fax: +7 492 32 30 85 Tel: +7 492 32 70 51
PARENT INSTITUTION/MINISTRY	Niznij Novgorod Department of Hydrometeorology and Environmental Monitoring. Roshydromet
PEOPLE INTERVIEWED AT LABORATORY	Director: Ivan Kondratjevich Jatskov Deputy Director Raisa Nickolaevna Komova Deputy Director of Water Monitoring Ludmila Vladimirovna Maslova
Sampling and field monitoring needs:	
QUESTION	RESPONSE
Do staff have training on use of water sampling equipment?	Sampling staff, who live close to the monitoring stations, take the samples and carry out some analyses in the sampling station. The remainder of the sample is then posted to the Vladimir laboratory for further analyses. Sampling staff are trained in their duties.
Are there written protocols for the sampling methods/equipment used?	Yes
Do the same staff do the sampling each time?	Yes
Do the staff who do the sampling also do laboratory analyses?	No, but see above – sampling staff make analyses for: temperature, water level, BOD, transparency, pH (paper strips), Dissolved Oxygen (by Winkler titration), dissolved CO ₂ .
Field sampling and monitoring equipment e.g. Friedinger/Ruttner bottle, dissolved oxygen, pH and conductivity meters: record the make, country of origin, assess the state	There is no field equipment, all analyses are done by titrimetry
How often are they calibrated?	No devices need calibration
Is new equipment needed? List what is needed.	A pH meter was needed in particular.
Are there vehicles for field sampling and is there a budget for fuel?	Yes, there are vehicles and "some" budget, barely enough.
Are there cold-boxes, refrigerators to conserve the samples during transit to the laboratories?	No. The samples are posted to the Vladimir laboratory. It takes 3-5 days to arrive. On arrival on the first day nutrients (nitrate, nitrite, ammonia, phosphate,) and iron are measured. Other determinands are measured later.
Are samples filtered on site and stabilised with acid?	No except samples for oil analysis are preserved.
Are there sufficient consumables for the sampling to be sustainable e.g. sampling bottles, spare membranes, buffer solutions etc.?	There is glassware and consumables but the budget is not enough and the money has to be found from some where else.
Make any other comments on sampling and field equipment especially if you actually go out on a sampling trip.	
Laboratory analysis needs:	
<i>Concentrate on the main, central laboratory in the capital. Make some assessment of the regional laboratories if possible on a separate sheet</i>	
QUESTION	RESPONSE
Is the fabric of the laboratory sound, i.e. does the roof leak, are the windows broken, is there air conditioning/heating, are the benches clean and sound and not likely to cause contamination of samples? Is the laboratory also used as an office?	The laboratory is in a wooden house about 100 years old which is protected (local heritage protection) so it is almost impossible to make changes. The local authority used to provide maintenance funds (10k\$) but now there is nothing. Fabric is sound but some signs that the roof leaks. The windows are double glazed but there are some gaps around the window

	frames. The floor covering is torn in places, although repaired, but would be better to be renewed. There is central heating for winter – hot water radiators - (external temperature –30 and +12C inside) but there is no air conditioning. The benches were acceptably clean and sound and not likely to cause contamination. The presence of large numbers of potted plants in the laboratory is not consistent with modern laboratory management practice. The offices were separate from the laboratory. There was an air extraction system in the laboratory.
Is the equipment sufficient and reliable and capable of producing results that are fit for purpose? The equipment needs for the new neighbour countries engaged in trans-boundary monitoring will need to be capable of matching the analytical performance of the EU25 neighbour(s) or else comparability will be compromised. Equipment needs of the other countries are likely to be less demanding at least in the short to mid-term. List the equipment, approximate age, country of origin and state. If the equipment is new does/did the manufacturer/supplier provide training?	The equipment present was: Infra-red oil detector, IKF-2a, RU make. New, training not necessary UNICO Spectrophotometer (new - about 1 year old, USA). Simple equipment, training not necessary. Photocolourimeter (old, RU, not used). Determinands measured colourimetrically: NO ₃ , NO ₂ , NH ₄ , PO ₄ , Fe, SO ₄ , SiO ₂ and water colour. Metals are not measured here but samples are sent to the Moscow laboratory for analysis.
Are there sufficient consumables for the analytical programmes to be sustainable? Are there refrigerators, incubators, ovens etc., is there access to pure water (distilled/deionised), pure reagents, standards, gases, spare parts for equipment, is there sufficient glassware such as beakers, flasks, pipettes?	Sample drying oven (new, RU Elektrotekna) Electronic balance (old, RU, still OK). Refrigerator (old RU still OK) 2 Fume cupboards (old but OK). There is a double water distillation still in good working order. There were sufficient consumables and glassware.
Are consumables available locally (nationally) or must they be imported, are there import regulations and taxes?	All consumables are available from national sources.
Make any other comments on the state of the laboratory, its equipment and consumables that arise during the mission.	
Quality control and data management needs:	
QUESTION	RESPONSE
Is the laboratory accredited under national/international protocols?	It will be accredited in Autumn 2006 according to the national system managed by the Hydrochemical Institute. Someone from the Hydrochemical Institute was assigned to assist them in this. Comments from Adella: About 50% of labs in RU are accredited. Good quality control system run by Hydrochem Institute. The protocols are revised every 6 years or so and another round is currently underway. Shewer charts are now used in accredited labs and these are sent routinely to the Hydrochemical Institute for independent checking
Are there standard operating procedures?	All documents are in hand in Vladimir for the accreditation process.
Are quality control charts and records kept so bias and error can be detected early?	Shewer charts will be kept in future.
Are staff trained on quality control procedures?	Staff have been trained on the quality process as part of the accreditation.
Are data screened and checked before being reported? Is this done electronically?	Part of the accreditation process.
What data management system is in place?	Paper records plus computer programmes to hold the data and send it to the Hydrochemical Institute. Reports are produced half-yearly. There is a room used for water data management and

	the computer in it was reasonably modern and in working order. There were a number of other computers in different rooms. There is no Internet connection but a dial-up email service.
Are there back-ups and security to protect the data?	The computer is backed-up and password protected.
Do the public have access to the data?	No they are directed to other, higher authorities or they are asked to pay for the data. During times of flood danger the public are informed.
What happens to the data after it is generated – is it used for water management purposes? If so – how?	The half-yearly report is sent to Hydrochemical Institute, Rostov-on-Don; Roshydromet, Moscow; the Niznij Novgorod Monitoring Centre and to the local authority in Vladimir. A local report is produced for local information.
Make any other comments on quality control, staff, data management and data handling that arise during the mission.	
<i>Institutional needs:</i>	
QUESTION	RESPONSE
How many staff are employed in the laboratory? Graduates/support-administrative.	For water monitoring there is an engineer and a laboratory technician plus an information/financial technician.
Does the laboratory have a sufficient and sustainable annual budget from regional or central sources?	The central budget is very small and there are no funds from local government.
Can the laboratory generate income by entering the market (e.g. is the government encouraging self-monitoring by dischargers)?	Yes. The majority of the budget appeared to come from the commercial samples done under the rule that dischargers must pay for analyses of what they are discharging (self-monitoring).
Are there private laboratories in competition?	No.
What is the monthly throughput of samples?	10 river stations supply samples to the laboratory at monthly intervals. During the melting period samples are taken daily. 20 samples per month are done under the State Monitoring Programme and 3 samples per month commercial samples (consents to discharge monitoring). For each sample, 24 determinands are measured.
Make any other comments on the sustainability of the laboratory that arise during the mission.	
Needs Assessment Report compiled by:	Tim Lack, János Fehér 27-28 July 2006.

Annex2. Needs Assessment Questionnaire for Ukraine

NEEDS ASSESSMENT CHECK LIST	
COUNTRY	UKRAINE
NAME AND ADDRESS OF LABORATORY	<p>(A) Central Geophysical Observatory Ministry of Extraordinary Situations of Ukraine Nauki av., 39, building 2 03028, Kiev tel.: + 38-(044) 265-6920 fax.: +38 (044) 265-6969</p> <p>(B) Kiev Oblast Ecological Laboratory 28 Turovskaia Str, Kyiv, Ukraine</p>
PARENT INSTITUTION/MINISTRY	<p>For Laboratory (A) Ministry of Extraordinary Situations of Ukraine</p> <p>For Laboratory (B) Ministry of Environment Protection</p>
PEOPLE INTERVIEWED AT LABORATORY	<p>At Laboratory (A) Ms. Tatiana Nikolaevna Babenko, Deputy Director, and Ms. Aleksandra Leonidovna Nikitenko, Head of Water Laboratory</p> <p>At Laboratory (B) Ms Larissa Tkachenko, Head of the Laboratory.</p>
Sampling and field monitoring needs:	
QUESTION	RESPONSES
Do staffs have training on use of water sampling equipment?	<p>(A) There is training on sampling methodology, but no equipment for sampling.</p> <p>(B) Yes.</p>
Are there written protocols for the sampling methods/equipment used?	<p>(A) Yes.</p> <p>(B) Yes.</p>
Do the same staff do the sampling each time?	<p>(A) Yes.</p> <p>(B) Yes.</p>
How often do they sample?	<p>(A) 4 per year per sampling site. At most important sites the frequency is 12 per year.</p> <p>(B) One or two samples per year at sampling sites.</p>
Do the staffs that do the sampling also do laboratory analyses?	<p>(A) Yes.</p> <p>(B) Yes.</p>
Field sampling and monitoring equipment e.g. Friedinger/Ruttner bottle, dissolved oxygen, pH and conductivity meters: record the make, country of origin, assess the state	<p>(A) No field equipment is used.</p> <p>(B) Less than one year old mobile equipment to measure conductivity, pH, temperature on site.</p>
How often are they calibrated?	<p>(A) N/A</p> <p>(B) Once a year.</p>
Are standards available + certificates and are the standards cooled and not expired?	<p>(A) Yes. Cooled.</p> <p>(B) Yes. Cooled.</p>
Is new equipment needed? List what is needed.	<p>(A) Mobile toolkit with emphasis on oxygen meter.</p> <p>(B) Mobile toolkit with emphasis on oxygen meter.</p>
Are there vehicles for field sampling and is there a budget for fuel?	<p>(A) There are two cars available plus one boat for large river sampling.</p> <p>(B) None! The Lab has to borrow a car from one of the Kyiv City organisations when they want to do field sampling. This</p>

	is one of the reasons why only 20 samples are analysed recently.
Are there cold-boxes, refrigerators to conserve the samples during transit to the laboratories?	(A) No cold-boxes and refrigerators for sample transportation. (B) Only one cold-box, which is far not enough.
Are samples filtered on site and stabilised with acid?	(A) Samples are not filtered. One part of samples is stabilized for AAS and dissolved oxygen analyses. (B) Filtering is done in the Lab only.
Are there sufficient consumables for the sampling to be sustainable e.g. sampling bottles, spare membranes, buffer solutions etc.?	(A) In general, yes. (B) Some glass bottles are used for waste water samples, while mostly mineral water plastic bottles are used for river water sampling. No membranes are used. Buffer solutions just enough to take 20 samples per month.
What kinds of bottles are used? (plastic for inorganic and glass for organics)	(A) Mineral water plastic bottles and some glass bottles are used. (B) Glass for waste water samples and plastic for river water samples.
Where are bottles cleaned and is deionised water available for cleaning?	(A) Yes. (B) Both types of bottles are cleaned with sodium carbonate solution, chromic sulphuric acid and distilled water.
Make any other comments on sampling and field equipment especially if you actually go out on a sampling trip.	-

Laboratory analysis needs:

QUESTION	RESPONSES
Is the fabric of the laboratory sound, i.e. does the roof leak, are the windows broken, is there air conditioning/heating, and are the benches clean and sound and not likely to cause contamination of samples? Is the laboratory also used as an office?	(A) The lab building was built in 1855. Refurbishment of the building would be needed. The preparatory rooms have wooden floor. The average temperature that the central heating system could produce is about 15-18 degree C during winter time. (B) The Lab occupies four rooms on the third floor of an office building owned by Kyiv City. Very limited working place is available for the staff in the lab.
Are there cooling facilities for standards, organic substances, and storage of samples?	(A) Yes. (B) Cooling facilities are available but standards are not kept separate from other samples.
How constant is the supply of electrical power and voltage fluctuation?	(A) Power supply is stable. (B) No problem with the power supply.

<p>Is the equipment sufficient and reliable and capable of producing results that are fit for purpose? The equipment needs for the new neighbour countries engaged in trans-boundary monitoring will need to be capable of matching the analytical performance of the EU25 neighbour(s) or else comparability will be compromised. Equipment needs of the other countries are likely to be less demanding at least in the short to mid-term. List the equipment, approximate age, country of origin and state. If the equipment is new does/did the manufacturer/supplier provide training?</p>	<p>(A) The Central Laboratory is capable of measuring traditional physico-chemical parameters, pesticides and some inorganic micro pollutants (Cd, Cu, Ni, Cr, Mn, Pb, and Zn). Conserved samples are sent to the Central Laboratory from partner labs for determination of inorganic micro pollutants and pesticide content.</p> <p><u>Laboratory equipment</u></p> <p>Freezer Dryer Heating furnace Spectrophotometer (SPEKOL 211, East German) Thermostats pH-meter Conductometer Colorimeter Capillary electrophoresis system (Beckman) Water distillation system (Wagtech)</p> <p>Gas-chromatograph (2, very old, one is out of operation) Atom-absorption spectrometer (2, one is out of operation) Flamephotometer (for Na and K determination)</p> <p>The laboratory devices are very old. Instrumentation is poor. Examinations of the inorganic micropollutants are made by one old atom-absorption spectrometer at a separate room of the laboratory. An old GC is used for pesticide measurements.</p> <p>(B) The Lab has equipment for conventional analyses only. Analytical methods used are based on gravimetry, titrimetry and photometry . The laboratory is not equipped for the analysis of inorganic and organic micropollutants.</p> <p>In the preparatory rooms there are gas aspiratory cabinets. Most of the instruments are made in the former Soviet Union, determination of their age is rather difficult. The equipment are as follows:</p> <p>Electronic precision analytic scale, Quick scale, Thermostat, Distillatory unit, Heating furnace, Destruction equipment, Ionometer, Conductivity meter, pH meter, spectrophotometer, device stock: pipettes, burettes, exicators heating devices, vacuum filter device, dissolved-oxygen meter, refrigerator.</p>
<p>Are there sufficient consumables for the analytical programmes to be sustainable? Are there refrigerators, incubators, ovens etc., is there access to pure water (distilled/deionised), pure reagents, standards, gases, spare parts for equipment, is there sufficient glassware (plastic) such as beakers, flasks, pipettes? Are there certificates for reagents and standards?</p>	<p>(A) The lab has tight budget, but there is no sever constrain caused by shortage of consumables. The budget is not enough for improvement of consumables.</p> <p>(B) The Lab receives only 5-10% of the needed budget from the ministry. Consequently it is in shortage of all consumables.</p>

Are consumables available locally (nationally) or must they be imported, are there import regulations and taxes?	(A) It seems that most used consumables were produced locally. (B) It seems that most consumables are available locally.
Are there facilities for the protection of employees? (Suction facilities, gas masks, showers)	(A) No. Not seen. (B) No.
How are reagents, etc. disposed? (Neutralization of waste water, collection of chloride and non-chloride substances)	(A) An external company takes away the neutralized waster water containing reagents. (B) After neutralization and dilution they are deposed to sewer system.
Make any other comments on the state of the laboratory, its equipment and consumables that arise during the mission.	(A) It was observed that potted plants are present in the laboratories that are not consistent with modern management practices. (B) It was observed that potted plants are present in the laboratories that are not consistent with modern management practices.
Quality control and data management needs:	
QUESTION	RESPONSES
Is the laboratory accredited under national/international protocols?	(A) Yes. It is accredited to national standard. (B) Yes. It is accredited to national standard and also participates in the intercalibration exercises among the national laboratories.
Are there standard operating procedures? Are they documented?	(A) Yes, the written protocols are available. (B) Yes, the written protocols are available.
How often are certain parameters analysed? And is the equipment calibrated accordingly? (How often?)	(A) (B)
Does the lab take part in round-robin test?	(A) Yes. Intercalibration centre is in Harkov. (B) Yes. Intercalibration centre is in Harkov.
Are quality control charts and records kept so bias and error can be detected early?	(A) Yes. (B) No local control charts or records, the lab participates on intercalibration programme of UA labs.
Does staff keep laboratory diaries?	(A) Yes. (B) Yes.
Are staffs trained on quality control procedures?	(A) Yes. (B) Yes. It is led by the head of the lab yearly.
Are data screened and checked before being reported? Is this done electronically?	(A) Yes. (B) Primarily data are recorded on paper. No database software is available thus he staff of the lab prepares excel sheets to record the results electronically.
What data management system is in place?	(A) Data management programme is in place. (B) No data management system is in place.
Are there back-ups and security to protect the data?	(A) Back-ups are done monthly. (B) No backups of the excel sheets. Only paper records are archived.
Do the public have access to the data?	(A) Data are sent to the MoEP and Hydromet. Information for the public is available through ministry channels. (B) Yes. Data are sent to the Ministry of Environment Protection and information is available for the public through ministry channels.

What happens to the data after it is generated – is it used for water management purposes? If so – how?	(A) Data are sent to MoEP. Reports are prepared by the MoEP and Hydromet as well. (B) Data are sent to MoEP. Reports are prepared by the MoEP and Hydromet as well.
Make any other comments on quality control, staff, data management and data handling that arise during the mission.	-
<i>Institutional needs:</i>	
QUESTION	RESPONSES
How many staffs are employed in the laboratory? Graduates/support-administrative.	(A) 15 staff members, all of them have university degree. (B) 5 staff in the Kyiv Lab and 3 staff at an affiliated lab in a major industrial city. All of them have university degree.
Does the laboratory have a sufficient and sustainable annual budget from regional or central sources?	(A) 40% of the yearly budget comes from the state and 60% from other sources. (B) No. Only 5-10% of the needed budget is covered by the state.
Can the laboratory generate income by entering the market (e.g. is the government encouraging self-monitoring by dischargers)?	(A) Yes. (B) Yes. It could increase the budget by an other 10%.
Are there private laboratories in competition?	(A) No. (B) No.
What is the monthly throughput of samples?	(A) ca. 850 samples per year. (B) 20 samples per month.
Make any other comments on the sustainability of the laboratory that arise during the mission.	-
Needs Assessment Report compiled by:	János Fehér, Katalin Zotter on 29 th Sept 2006.

Annex3. Needs Assessment Questionnaire for Belarus

NEEDS ASSESSMENT CHECK LIST		
COUNTRY	BELARUS	
NAME AND ADDRESS OF LABORATORY	Republican Centre for Radiation Control and Environmental Monitoring (RCRCM) 220114, Minsk Nezavisimosti Ave, 110-A Tel: (+375) 17 264 55 70 Fax: (+375) 17 263 95 62 Email: us204@rad.by.mecom.ru	Minsk oblast regional analytical laboratory 3, Avtomobilistov Str. Minsk, Belarus Tel. (+375) 17 289 86 62
PARENT INSTITUTION/MINISTRY	Department of Hydrometeorology of the Ministry of Natural Resources and Environmental Protection	Ministry of the Natural Resources and Environmental Protection
PEOPLE INTERVIEWED AT LABORATORY	Mr. Tishchikov (head of laboratory) Ms. Irina Savinko (head of the hydrochemical laboratory) Ms. Svetlana Esipovich (specialist of the physical-chemical laboratory) Ms. Catherina Popova (head of the data processing unit)	Ms. Galina Tatur (head of laboratory)
Sampling and field monitoring needs:		
QUESTION	RESPONSE 1	RESPONSE 2
Do staffs have training on use of water sampling equipment?	Yes	Yes
Are there written protocols for the sampling methods/equipment used?	Yes	Yes
Do the same staff do the sampling each time?	There is a rotating system for doing the sampling and the lab analyses. Both are done by the trained laboratory staff.	Yes (3 staff members are accredited for sampling)
Do the staffs that do the sampling also do laboratory analyses?	Yes	No
Field sampling and monitoring equipment e.g. Friedinger/Ruttner bottle, dissolved oxygen, pH and conductivity meters: record the make, country of origin, assess the state	Romanian 'HANNA' pH meter (2003), an oxygen meter mobile kit	The laboratory has no field monitoring equipment. Sampling staff only takes the samples, preserves them, and takes back to the laboratory.
How often are they calibrated?	PH meter is calibrated every other day on field	Not applicable.
Is new equipment needed? List what is needed.	Better pH meter	They would need mobile measuring toolkits.
Are there vehicles for field sampling and is there a budget for fuel?	Yes	They have 1 vehicle, with fuel for 2000 km per month. They would need a second car to be able to do more sampling.
Are there cold-boxes, refrigerators to conserve the samples during transit to the laboratories?	There are some cold boxes, but there is a need for some more.	Sampling team has only isolating boxes that keep the original temperature of the samples. The most far sampling point is less than 100 km away from the lab. Samples are taken back to the lab on the same day, and the analytical staffs make the analysis on the same day.
Are samples filtered on site and stabilised with acid?	Samples are not filtered on site, but preserved.	Samples are filtered on site depending on the analyses.

Are there sufficient consumables for the sampling to be sustainable e.g. sampling bottles, spare membranes, buffer solutions etc.?	Consumables are okay for the current number of samples, but more glassware would be needed for hydrobiological analyses.	These are no shortages in sampling consumables, because sampling is planned ahead. However, there is a need for more plastic bottles for sampling.
Make any other comments on sampling and field equipment especially if you actually go out on a sampling trip.	-	If new equipment is received, there is a need to train the sampling team.
Laboratory analysis needs:		
<i>Concentrate on the main, central laboratory in the capital. Make some assessment of the regional laboratories if possible on a separate sheet</i>		
QUESTION	RESPONSE 1	RESPONSE 2
Is the fabric of the laboratory sound, i.e. does the roof leak, are the windows broken, is there air conditioning/heating, are the benches clean and sound and not likely to cause contamination of samples? Is the laboratory also used as an office?	Although there are some cracks on the wall, the building of the RCRCM is in a good condition. Fresh painting on the walls, good windows, and suitable heating system. There are plants in the lab rooms, and in most cases, laboratory also serves as office for the staff.	Building is in good condition, windows are good, new heating system for the building, there are safety power for computers and equipment. Laboratory is also used as an office.
Is the equipment sufficient and reliable and capable of producing results that are fit for purpose? The equipment needs for the new neighbour countries engaged in trans-boundary monitoring will need to be capable of matching the analytical performance of the EU25 neighbour(s) or else comparability will be compromised. Equipment needs of the other countries are likely to be less demanding at least in the short to mid-term. List the equipment, approximate age, country of origin and state. If the equipment is new does/did the manufacturer/supplier provide training?	Equipment is okay, although there are shortages, especially on equipment measuring organic nitrogen. Better microscopes are needed for the hydrobiological analyses, and maybe a new atomic absorption photometer is going to be needed in the future. Consumables sometimes expensive for the new, western laboratory equipment, therefore alternative consumables sometimes looked for. Russian microscopes Russian minivans Russian photometer 'Fotometer KFK-3-01' (2004) Russian 'FLUORAT D2-3M' atomic absorption photometer (VARIAN Spectr AA55B) Eastern German AAS3 (1989)	Oil products are measured by using CCl4 that method has to be changed this year. The new methodology and equipment will be implemented by the end of this year. Plastic and glass sample bottles. Refrigerator, isolation box (thermostat to keep the sample at a certain temperature) Balances IONOMER I-130 2 pieces of Russian FOTOMETR KFK-3 photometers (~10 years old) Soviet ovens (CN OL-3,5) AVTOTECT MP gazoanalizator CO-CN CVET-800 (new) with CVET BRG-186N chromatographer and an older chromatographer Atomic Absorption Spectrometer 'PERKIN ELMER 3300' (~10 years old)
Are there sufficient consumables for the analytical programmes to be sustainable? Are there refrigerators, incubators, ovens etc., is there access to pure water (distilled/deionised), pure reagents, standards, gases, spare parts for equipment, is there sufficient glassware such as beakers, flasks, pipettes?	There are some big refrigerators to store the samples. There are some incubators, ovens. Pure water is accessible. Argon gas was seen in the atomic absorption laboratory room. Beside the hydrobiologists, no one made comments on the need for new glassware.	Consumables sometimes missing.
Are consumables available locally (nationally) or must they be imported, are there import regulations and taxes?	It seems that most consumables have to be imported.	Glassware is imported and very expensive. Tax has to be paid for glassware.
Make any other comments on the state of the laboratory, its equipment and	The laboratory was clean, well organised. It was also observed	It was also observed that potted plants are present in the

consumables that arise during the mission.	that potted plants are present in the laboratories that is not consistent with modern management practices.	laboratories that is not consistent with modern management practices.
Quality control and data management needs:		
QUESTION	RESPONSE 1	RESPONSE 2
Is the laboratory accredited under national/international protocols?	It is accredited to ISO 1725, also participates in the intercalibration exercises.	Accredited under Belarus protocol (not ISO). Intercalibration exercise once a year.
Are there standard operating procedures?	Yes.	Yes
Are quality control charts and records kept so bias and error can be detected early?		Yes
Are staffs trained on quality control procedures?		Yes
Are data screened and checked before being reported? Is this done electronically?	Data is sent electronically. Raw data received from the labs that are quality checked after importing into the national database.	The person who does the analyses records the results into the "record book", and also makes the electronic data input. During the analysis, the limits are checked with the analytical results, but no one checks the results later, and the computer software neither does quality checking.
What data management system is in place?	MS Access tailored to the needs of the country	a software called "AUS Vada"
Are there back-ups and security to protect the data?	Monthly backups, annually archived.	
Do the public have access to the data?	Upon a particular request, information is provided, dataset is not publicly available. Publications are freely available. Some information are on the website that are also available.	
What happens to the data after it is generated – is it used for water management purposes? If so – how?		Data submission is once a week to rayon and oblast levels (the centre of the oblast level is in another building).
Make any other comments on quality control, staff, data management and data handling that arise during the mission.	New computers were seen in the room of the data processing unit.	-
Institutional needs:		
QUESTION	RESPONSE 1	RESPONSE 2
How many staffs are employed in the laboratory? Graduates/support-administrative.	Hydrobiological laboratory: 6 Hydrochemical laboratory: 6 Physical-chemical laboratory: 5 Data processing unit: 3 All of them have high-level education.	14 laboratory staff (11 have university degrees, 3 have college/technical degrees)
Does the laboratory have a sufficient and sustainable annual budget from regional or central sources?	Only 70-80% is covered from state budget. The remaining 20-30% is gained by offering services to other state owned organisations. The participation in accidental pollution monitoring and lab analyses are not compensated by the State.	100% budget comes from State
Can the laboratory generate income by entering the market (e.g. is the government encouraging self-monitoring by dischargers)?	Yes.	The laboratory is not allowed to make service for market customers, only if oblast level allows them.
Are there private laboratories in competition?	No	There are some organisations to provide such services on the

		market.
What is the monthly throughput of samples?	Hydrobiological laboratory: ~62 Hydrochemical laboratory: ~900 Physical-chemical laboratory: ~130	~500 samples a year (86 sites, 4 times a year, ~20 parameters per sample)
Make any other comments on the sustainability of the laboratory that arise during the mission.	-	-
Needs Assessment Report compiled by:	János Fehér, Attila Lázár 8 August 2006.	János Fehér, Attila Lázár 9 August 2006.

Annex4. Needs Assessment Questionnaire for Moldova

NEEDS ASSESSMENT CHECK LIST	
COUNTRY	MOLDOVA
NAME AND ADDRESS OF LABORATORY	<p>(A) Central Ecological Laboratory of the Inspectorate of Ecological Agency Chisinau State Ecological Inspectorate of the Ministry of Ecology and Natural Resources str. Gh. Tudor 3, MD-2028, Chisinau tel.: + 373-(22)-28-15-77 fax.: +373-(22)-72-93-47</p> <p>(B) Monitoring Department on Environmental Quality State Hydrometeorological Service 259, Grenoble str. Chisinau, MD2043 Tel: +373-(22)-77 36 11 +373-(22)-77 35 29 Fax: +373-(22)-77 36 36</p>
PARENT INSTITUTION/MINISTRY	<p>For Laboratory (A) Ecological Agency Chisinau State Ecological Inspectorate of the Ministry of Ecology and Natural Resources</p> <p>For Laboratory (B) State Hydrometeorological Service Ministry of Ecology and Natural Resources</p>
PEOPLE INTERVIEWED AT LABORATORY	<p>At Laboratory (A) Mr Copacinschi Gheorghe Head of the Laboratory</p> <p>At Laboratory (B) Ms Anna Budishtianu, Deputy Head of Environmental Quality Monitoring Dept. and Ms. Ludmilla Cunician Head of Surface Water Quality Monitoring Division</p>

Sampling and field monitoring needs:	
QUESTION	RESPONSES
Do staffs have training on use of water sampling equipment?	<p>(A) Yes.</p> <p>(B) Yes.</p>
Are there written protocols for the sampling methods/equipment used?	<p>(A) Yes.</p> <p>(B) Yes.</p>
Do the same staff do the sampling each time?	<p>(A) Yes, there is a team for sampling.</p> <p>(B) Yes.</p>
How often do they sample?	<p>(A) 4 times in a year on 16 sampling sites.</p> <p>(B) Monthly</p>
Do the staffs that do the sampling also do laboratory analyses?	<p>(A) No.</p> <p>(B) Yes.</p>
Field sampling and monitoring equipment e.g. Friedinger/Ruttner bottle, dissolved oxygen, pH and conductivity meters: record the make, country of origin, assess the state	<p>(A) There are mobile equipment to measure DO, conductivity, pH and temperature.</p> <p>(B) There are mobile equipment to measure DO,</p>

	conductivity, pH, temperature and turbidity.
How often are they calibrated?	(A) Once a year (B) Once a year
Are standards available + certificates and are the standards cooled and not expired?	(A) Yes. Cooled. (B) Yes. Conserved on site and cooled.
Is new equipment needed? List what is needed.	(A) Mobile toolkit. (B) Mobile toolkit, 1 new cold-box, 1 new refrigerator, a small motor boat.
Are there vehicles for field sampling and is there a budget for fuel?	(A) The lab has a car and it is promised to receive a Russian NIVA jeep. The lab receives budget for only 200 litre fuel per month that is not enough to cover all sampling sites. (B) One car (minivan) is available, but fuel is limited.
Are there cold-boxes, refrigerators to conserve the samples during transit to the laboratories?	(A) No cold-boxes. There are mobile refrigerators, but they cannot be used in practice. Samples are kept at 20 °C. The samples have to be analysed within 24 hours. (B) Old cold-boxes are available.
Are samples filtered on site and stabilised with acid?	(A) Samples are not filtered. (B) Samples are filtered and conserved.
Are there sufficient consumables for the sampling to be sustainable e.g. sampling bottles, spare membranes, buffer solutions etc.?	(A) In general, yes. (B) Very limited budget to replace membranes, filters, glasses/bottles.
What kinds of bottles are used? (plastic for inorganic and glass for organics)	(A) New, never used before plastic bottles are used in the majority of cases. After using once the bottles are discarded. There are 3 litre glass bottles as well, but they are used only in exclusive cases. (B) Plastic bottles (received from TACIS program) and glass bottles, as well.
Where are bottles cleaned and is deionised water available for cleaning?	(A) Plastic bottles are used only onced. Glass bottles are cleaned with sodium carbonate solution, chromic sulphuric acid and distilled water. (B) Both types of bottles (plastic and glass) are used repetedly. In case of detergents bottles are cleaned with sodium carbonate solution, in other cases bottles are cleaned with chromic sulphuric acid and distilled water.
Make any other comments on sampling and field equipment especially if you actually go out on a sampling trip.	-

Laboratory analysis needs:

QUESTION	RESPONSES
Is the fabric of the laboratory sound, i.e. does the roof leak, are the windows broken, is there air conditioning/heating, and are the benches clean and sound and not likely to cause contamination of samples? Is the laboratory also used as an office?	(A) The building is in a good condition. The Lab has 280 m ² space in a multy floor building. The building is owned by a bank and most of the office space is used by the bank. They have to pay only for the utilities (no rental, etc). Working tables, and benches seemed to be clean. Although the laboratories had some desks, there were separate rooms for staff with desks (e.g. to have lunch). (B) The building is in an acceptable condition. No problem with windows or heating. The laboratory rooms are also used as offices.
Are there cooling facilities for standards, organic	(A) Yes.

substances, and storage of samples?	(B) Yes, but they are quite old.
How constant is the supply of electrical power and voltage fluctuation?	(A) No problem with the power supply. (B) No problem with the power supply.
<p>Is the equipment sufficient and reliable and capable of producing results that are fit for purpose? The equipment needs for the new neighbour countries engaged in trans-boundary monitoring will need to be capable of matching the analytical performance of the EU25 neighbour(s) or else comparability will be compromised. Equipment needs of the other countries are likely to be less demanding at least in the short to mid-term. List the equipment, approximate age, country of origin and state. If the equipment is new does/did the manufacturer/supplier provide training?</p>	<p>(A) <u>Identified equipments by mission team during the laboratory visit:</u> Centrifuge: MPW-340 Electrometer CHROM5 laboratorni pristroje Praha (1990) Gas chromatograph, Russian (1978) BUCK Scientific AAS 210 VGP, USA (1995) BUCK Graphite Furnace 220-GF, USA (1995) Agilent Technologies 6890N (2003) Photometer: KFK-2MP Photometer: KFK-3 Termostat: TGI-02-200 Mobile pH and DO meter: HACH DO175 Laboratory pH meter: Ionometer I-160M, Belarus, quite new one ----- <u>Received list of equipments from laboratory head</u> Thermometer TY 25-2021.003-88TL-2M, RU 1990 Anemometru ACO-3, RU 1990 Balance VGR-200, RU 1990 Greutati 6-2-210, RU 1990 Fumometru CMOG-1, Ukraine 1988, 1990 Colorimetru KFK-3, RU 2003 Retorta cotata – 50cm³, 100 cm³, RU 1998 Fotometru cu flacara PAZ-2, RU 1989 PH meter, BY 2002 Cilindre gradate, Clin (?) 1998 Cromatograf CHROM-5, Cehia 1998 Termostat TGU-02-200, Ukraine 1993 (B) <u>Identified equipments during the laboratory visit by mission team:</u> Spectrophotometer VARIAN Cary 100 Conc Photometer: KFK-3, RU Incubator: MEMMERT 40 IONOMER EB-74 Automatic titration BAT-15, RU Zeeman SOLAR FS 90 (furnace autosampler) UNICAM GF 90 plus UNICAM 969 AA spectrometer, 1998 UNICAM VP-90 vapour system HP 6890 – GC system plus ----- <u>Received list of equipments:</u> Water Sauna _heating system Baie de apa pentru laborator TY 64-1-423-72, Ukraine 1975 Agitator magnetic rotator MM-5, RU 1984, 1988 Agitator mechanic rotator KDM-1, RU 1985 Termostat (30-200 °C), DE 1999 Termostat TL-2 (0-360 °C), RU 2003 Termostat TT (0-100 °C), RU 1988 Termostat TL-2 (0-150 °C), RU 1999 Termostat M10-2 (-10-40 °C), RU 1988 BOSH refrigerator, DE 1999 Resou electric heating : GOST 14919-83, RU 1990-1993 Balance, RU 1984, 1990, 1991 Set de greutati , RU 1985 Gas chromatograph: HP6890, DE Manometr for the measuring of pressure Nr. 1494, RU 1990</p>

	<p>Manometru pentru oxigen, hidrogen Nr. 202, No.0-715, No.111-79, No.315, No.644, No.111-78, RU 1990</p> <p>Vaporizator rotativ IR-1 M-2, TY 25-1173.102-84, RU 1986</p> <p>Centrifuge OPN-8, RU 1990</p> <p>Ionometer EB-74, Georgia 1985</p> <p>Dulap termic UM200 "Mettler" DE 1999</p> <p>Photometer KFK-2, RU 1986</p> <p>Photometer KFK-3, RU 1989</p> <p>Spectrophotometer VARIAN Cary-100, Australia 2000</p> <p>Spectrophotometer SOLAAR 969Z, England 2000</p>
<p>Are there sufficient consumables for the analytical programmes to be sustainable? Are there refrigerators, incubators, ovens etc., is there access to pure water (distilled/deionised), pure reagents, standards, gases, spare parts for equipment, is there sufficient glassware (plastic) such as beakers, flasks, pipettes? Are there certificates for reagents and standards?</p>	<p>(A) The laboratory can request budget for consumables (regents, glassware) only once a year. The received buget is not always identical with the request. The budget only covers the monitoring of 16 regular sampling sites, and not enough to carry out additional activities.</p> <p>Refrigerators, incubators are available.</p> <p>(B) The budget is available, but there is a financial shortage to buy new equipment or consumables (Though the budget limitation does not stop the regular monitoring work of the laboratory).</p>
<p>Are consumables available locally (nationally) or must they be imported, are there import regulations and taxes?</p>	<p>(A) It seems that most used consumables were produced locally, some come from Ukraine and Russia.</p> <p>(B) Import from Europe, Russia, Ukraine, etc.</p>
<p>Are there facilities for the protection of employees? (Suction facilities, gas masks, showers)</p>	<p>(A) Only clothes and plastic gloves.</p> <p>(B) Only gloves and lab clothes are available. No shower, gas masks.</p>
<p>How are reagents, etc. disposed? (Neutralization of waste water, collection of chloride and non-chloride substances)</p>	<p>(A) This issue has not been solved yet.</p> <p>(B) No central hazardous substance handling in Moldova. Disposal of such materials is a significant problem for the lab.</p>
<p>Make any other comments on the state of the laboratory, its equipment and consumables that arise during the mission.</p>	<p>(A) It was observed that potted plants are present in the laboratories that are not consistent with modern management practices.</p> <p>A new atomic absorption measurement equipment would be needed. In addition, a mobile chromatograph would also be needed.</p> <p>The list of measured parameters are limited by the budget provided by the Government.</p> <p>(B) -</p>

Quality control and data management needs:

QUESTION	RESPONSES
<p>Is the laboratory accredited under national/international protocols?</p>	<p>(A) Yes. It is accredited to national standard, which based on ISO 17025 standard.</p> <p>(B) Yes, by national standard, which is based on ISO 17025.</p>
<p>Are there standard operating procedures? Are they documented?</p>	<p>(A) Yes, the written protocols are available, These are recommended by the Hydromet Service.</p> <p>(B) Yes.</p>
<p>How often are certain parameters analysed? And is the equipment calibrated accordingly? (How often?)</p>	<p>(A) Quaterly. Equipment is calibrated 4 times a year.</p> <p>(B) Samples are taken monthly, and all are analysed before the next monthly group of samples arrive (within a month).</p>

Does the lab take part in round-robin test?	(A) Yes. Intercalibration is done quarterly. (B) Once a year.
Are quality control charts and records kept so bias and error can be detected early?	(A) Yes. (B) Yes (called as journal).
Does staff keep laboratory diaries?	(A) Yes. (B) Yes.
Are staffs trained on quality control procedures?	(A) Yes, but occasionally. (B) Yes, quarterly training.
Are data screened and checked before being reported? Is this done electronically?	(A) Yes. The director does the final checking. It is done on paper. (B) Values are checked by two persons. The 'journal' is only in paper format. Data entered into computer files by the Information Group of SHS, which runs the surface water quality database (only the concentrations).
What data management system is in place?	(A) Data management programme is not available. Thus the staff of the lab prepares excel sheets or only MsWord files to record the results electronically. (B) An MS DOS program stores the data.
Are there back-ups and security to protect the data?	(A) No backups of the excel sheets or MsWord files. Only paper records are archived. (B) Yes.
Do the public have access to the data?	(A) The lab reports to State Ecological Inspectorate (SEI). Public information is not its duty. (B) No public access to data. Only information on the status of the environment (e.g. exceeding MAC or not) is available for the public. These information are available on the website (monthly status of the environment) and the Ministry prepares reports (monthly) on the state of the environment.
What happens to the data after it is generated – is it used for water management purposes? If so – how?	(A) Data are sent to SEI. (B) Sent to Information Group.
Make any other comments on quality control, staff, data management and data handling that arise during the mission.	(A) The storage and back-ups of data are not well established. The further use of data is not clearly described. (B) The further use of data is not clearly described.
<i>Institutional needs:</i>	
QUESTION	RESPONSES
How many staffs are employed in the laboratory? Graduates/support-administrative.	(A) 10 staff in the laboratory: 8 have university degrees, and 2 technicians. (B) 7 permanent staff work in the lab (4 have university degree, 3 technicians), 3 staff are in the field team (all have university degree)
Does the laboratory have a sufficient and sustainable annual budget from regional or central sources?	(A) 60% of the yearly budget comes from the state and 40% from other sources. (B) 100% budget from the Government, but low salaries, and it is not enough for the maintenance and the replacement of equipment.
Can the laboratory generate income by entering the market (e.g. is the government encouraging self-monitoring by dischargers)?	(A) Yes. There is a must for them to generate at least 40% of their yearly budget from external sources such as industrial plants, sewerage companies, citizens, etc. This extra income is only enough to cover the needed 40% of the budget, and not enough to make developments on the equipments.

	(B) Yes. The extra is around 10%, but can be used only for replacement + consumables and not for salaries.
Are there private laboratories in competition?	(A) No. (B) No.
What is the monthly throughput of samples?	(A) ca. 200 water samples per year. (Plus air and soil samples which were not discussed.) (B) ~40 water samples per month (maximum of 49 parameters per sample)
Make any other comments on the sustainability of the laboratory that arise during the mission.	-
Needs Assessment Report compiled by:	János Fehér, Attila Lázár on 5 th Oct 2006.

Annex5. Needs Assessment Questionnaire for Armenia

NEEDS ASSESSMENT CHECK LIST	
COUNTRY	ARMENIA
NAME AND ADDRESS OF LABORATORY	(A) Centre Analytical Laboratory of Centre for Ecological-Noosphere Studies 66 Abovyan Str. Yerevan, 375025, Armenia (B) Environmental Monitoring Centre 29 Komitas Street Yerevan 375012, Armenia
PARENT INSTITUTION/MINISTRY	(A) National Academy of Sciences (B) Ministry of Nature Protection
PEOPLE INTERVIEWED AT LABORATORY	(A) Dr. Armen K. Saghatelyan, Director of the Centre for Ecological-Noosphere Studies (B) Mr Rudolf Torosyan, Director of Environmental Monitoring Centre
Sampling and field monitoring needs:	
QUESTION	RESPONSES
Do staffs have training on use of water sampling equipment?	(A) Yes. (B) Yes.
Are there written protocols for the sampling methods/equipment used?	(A) Yes. (B) Yes.
Do the same staff do the sampling each time?	(A) Yes, there is a team for sampling. (B) Yes.
How often do they sample?	(A) Once a month. (B) Weekly.
Do the staffs that do the sampling also do laboratory analyses?	(A) No. Separate team does the sampling. (B) Most of the sampling staff is also involved in analysis work.
Field sampling and monitoring equipment e.g. Friedinger/Ruttner bottle, dissolved oxygen, pH and conductivity meters: record the make, country of origin, assess the state	(A) There are mobile equipment to measure DO, conductivity, pH, salinity, transparency, turbidity and temperature. (B) There are mobile equipment to do measurements on the field for DO, conductivity, pH, salinity, transparency, turbidity and temperature.
How often are they calibrated?	(A) Once a month. (B) Every case they do measurement.
Are standards available + certificates and are the standards cooled and not expired?	(A) Yes. Cooled or kept in separate cabinets. (B) Yes. Certified standards are available. Cooled or kept in separate cabinet.
Is new equipment needed? List what is needed.	(A) Some electrodes for the available mobile equipment. (B) Yes. HORIBA mobile toolkit.
Are there vehicles for field sampling and is there a budget for fuel?	(A) The Centre Analytical Laboratory has a car, which is used for all sampling activities. Fuel is not a problem. (B) Yes. The lab has a fairly new car. To fulfil all required duties the lab needs an other new car.
Are there cold-boxes, refrigerators to conserve the samples during transit to the laboratories?	(A) Cold-boxes are available for sampling. (B) Cold-boxes are available.
Are samples filtered on site and stabilised with acid?	(A) Samples are filtered and stabilised. No filtered samples are also taken whenever they are

	necessary. (B) Samples are filtered only in the lab when analysis requires.
Are there sufficient consumables for the sampling to be sustainable e.g. sampling bottles, spare membranes, buffer solutions etc.?	(A) Generally there is no problem with the availability of consumers. (B) Consumables are available at acceptable level.
What kinds of bottles are used? (plastic for inorganic and glass for organics)	(A) Plastic mineral water bottles are used dominantly. Glass bottles are also available for PoP analysis. (B) Plastic bottles are used dominantly (i.e. for metals). Special glass bottles are also available.
Where are bottles cleaned and is deionised water available for cleaning?	(A) Bottles are cleaned with chromic sulphuric acid and distilled water. (B) Plastic bottles are only used once for metals. Other plastic and glass bottles are cleaned with clean water and heated.
Make any other comments on sampling and field equipment especially if you actually go out on a sampling trip.	-
Laboratory analysis needs:	
Concentrate on the main, central laboratory in the capital. Make some assessment of the regional laboratories if possible on a separate sheet	
QUESTION	RESPONSES
Is the fabric of the laboratory sound, i.e. does the roof leak, are the windows broken, is there air conditioning/heating, and are the benches clean and sound and not likely to cause contamination of samples? Is the laboratory also used as an office?	(A) The building is in good condition. It was renovated recently. Heating system works fine. No problem with electricity or water supply. Working tables, and benches looked clean. Laboratory also used as office by the staff. (B) The building is under partial reconstruction. Heating system works acceptably. No problem with the electricity or water supply. Benches are clean. Laboratory also used as office.
Are there cooling facilities for standards, organic substances, and storage of samples?	(A) Yes. (B) Yes.
How constant is the supply of electrical power and voltage fluctuation?	(A) No problem with the power supply. (B) No problem with the power supply.
Is the equipment sufficient and reliable and capable of producing results that are fit for purpose? The equipment needs for the new neighbour countries engaged in trans-boundary monitoring will need to be capable of matching the analytical performance of the EU25 neighbour(s) or else comparability will be compromised. Equipment needs of the other countries are likely to be less demanding at least in the short to mid-term. List the equipment, approximate age, country of origin and state. If the equipment is new does/did the manufacturer/supplier provide training?	(A) Observed equipment: - Atomic-absorption spectrometer, Analyst 800, PerkinElmer, USA 2000 - Water checker, Horiba Ltd., U-10 (2M), USA 1991 - Spectrophotometer, Hach, Drell-2400, USA 2001 - SPECORD UV VIS, SpectroPhotometr, Germany 1986 - Atomic Absorption Spectrophotometer AAS1N, Carlzeiss-Jena, Germany, Germany, 1988 - SpectroPhotometr-46 , Lomo, USSR, 1989 - Portable Radiation Monitor, F-600 (Eberline, USA)- portable, 1997 - Gamma- Spectrometr, Inspector NaI Portable System with Genie-2000 spectroscopy system (Canberra. USA), 1995 - Gamma- Spectrometr, Semiconductor Ge-Detector with Genie-2000 spectroscopy system (Canberra. USA), 2003 - β -radiometer RKB4-1 λ (Russia)- gross β - activity, USSR, 1988 - Muphels and Dryers for every termo profile, USSR, 1976-1988 - Technical and Analitic balances for every weighing units, USSR, 1976-1988

	<ul style="list-style-type: none"> - Photoelectrocolorimetr, KFK-2, USSR, 1987 - Flame photometr-PFM, Zarya, USSR, 1961 - Colorimetr B-08M, USSR, 1986 - Deiozonator Simplicity, Millipore, France, 2003 - Disstillator, GFL 2001/2, Germany, 2004 - Mass-spectrometr and Gas Chromotography, Thermo Electron, USA, 2004 <p>(B) Observed equipment:</p> <ul style="list-style-type: none"> - GS/MS Varian CP-3800 (air conditioning problems over 30 °C) - Gas chromatograph (old Russian type) - Spectrophotometers (Hach, Russian) - ICP Hass spectrometer ELAN 900, Perkin-Elmer (problems with argon supply) - Thermostat (old) - COD reactor, Hach (2) - BOI measurer, Hatch (2) - Electric conductivity meter (old) - pH meter (old) - scales of different types - Hatch multiparameter instrument (DO, EC, pH), - Deionisation - Water steam distiller, pipettes, burettes - MP-Troll-900 sampler (2) - Laboratory mixers - Glass ware (pipettes, burettes, bottles etc.) - refrigerators
Are there sufficient consumables for the analytical programmes to be sustainable? Are there refrigerators, incubators, ovens etc., is there access to pure water (distilled/deionised), pure reagents, standards, gases, spare parts for equipment, is there sufficient glassware (plastic) such as beakers, flasks, pipettes? Are there certificates for reagents and standards?	<p>(A) Consumables are generally sufficient. Occasionally there is shortage in pipettes or other consumables.</p> <p>(B) Currently supply of consumables is at sufficient level financed from international projects. There are certified reagents and standards available.</p>
Are consumables available locally (nationally) or must they be imported, are there import regulations and taxes?	<p>(A) Limited local production. 70-80% of the used consumables are imported.</p> <p>(B) Only limited local production, most of the consumables are imported.</p>
Are there facilities for the protection of employees? (Suction facilities, gas masks, showers)	<p>(A) Only some gas masks in limited number are available. No other protection facilities saying no dangerous materials are used in the lab.</p> <p>(B) Only gloves and lab cloaks are available.</p>
How are reagents, etc. disposed? (Neutralization of waste water, collection of chloride and non-chloride substances)	<p>(A) This issue has not been solved yet. No national service provider in this field.</p> <p>(B) This issue is not solved. No national services in this field.</p>
Make any other comments on the state of the laboratory, its equipment and consumables that arise during the mission.	-
Quality control and data management needs:	
QUESTION	RESPONSES
Is the laboratory accredited under national/international protocols?	<p>(A) The lab is not accredited. No budget to finance this. An international cooperation project is under planning and in the frame of it is planned to accredit the lab.</p> <p>(B) The lab is accredited by national standard.</p>
Are there standard operating procedures? Are they documented?	<p>(A) Yes. The applied methodologies are similar to the ISO standards.</p> <p>(B) Yes.</p>
How often are certain parameters analysed? And is the	(A) Monthly.

equipment calibrated accordingly? (How often?)	(B) Some parameters are analysed daily, some are analysed monthly. Calibration is done every case the equipment is used.
Does the lab take part in round-robin test?	(A) Yes. Intercalibration is going on in the frame of an ongoing NATO project in which GE and AZ laboratories participate. (B) The lab does not participate in intercalobration.
Are quality control charts and records kept so bias and error can be detected early?	(A) Yes. (B) Yes.
Does staff keep laboratory diaries?	(A) No. (B) Yes.
Are staffs trained on quality control procedures?	(A) Yes. It is done monthly. (B) No.
Are data screened and checked before being reported? Is this done electronically?	(A) Yes. The head of the Lab and the NATO project leader are also checking the data. (B) Yes. First, the head of analytical lab makes the primary checking. Afterward the data are sent to the information unit and they also do checking.
What data management system is in place?	(A) The paper-based records are stored electronically in the laboratory in an GIS based programme. (B) The analytical data are recorded electronically and stored in two computers.
Are there back-ups and security to protect the data?	(A) Backups are done regularly. (B) Data are stored in CDs as back-ups.
Do the public have access to the data?	(A) All records analysed by the laboratory in the frame of the ongoing NATO project are available free for the public. These data are published on the web. Data produced from the state budget are available up on request. Data produced from contracted project are not available. (B) Yes. All data are publicly available.
What happens to the data after it is generated – is it used for water management purposes? If so – how?	(A) The CENS runs an own library. They also produce scientific publications. (B) Data produced by this lab go to the Information Analytical Centre of the MNP.
Make any other comments on quality control, staff, data management and data handling that arise during the mission.	-
<i>Institutional needs:</i>	
QUESTION	RESPONSES
How many staffs are employed in the laboratory? Graduates/support-administrative.	(A) 12 staff is working at the Centre Analytical Laboratory. 11 have university degree. (B) There 21 staff of the lab. 18 have university degree.
Does the laboratory have a sufficient and sustainable annual budget from regional or central sources?	(A) For basic activities, yes. (B) 99% of the yearly budget of the lab comes from state source.
Can the laboratory generate income by entering the market (e.g. is the government encouraging self-monitoring by dischargers)?	(A) Yes. It is estimated that the CENS receives an additional 70% from the market, while the laboratory about 60%.

	(B) Additional income is not relevant.
Are there private laboratories in competition?	(A) No. (B) There are some labs that are capable of water analyses, as well.
What is the monthly throughput of samples?	(A) About 40 water samples per month. (B) About 85 – 90 samples per month.
Make any other comments on the sustainability of the laboratory that arise during the mission.	-
Needs Assessment Report compiled by:	János Fehér, Katalin Zotter on 7 th Nov 2006.

Annex6. Needs Assessment Questionnaire for Azerbaijan

NEEDS ASSESSMENT CHECK LIST	
COUNTRY	AZERBAIJAN
NAME AND ADDRESS OF LABORATORY	(A) Monitoring Centre of Environmental Pollution Khudu mammadov str. 3 Baku, Azerbaijan (B1) Complex Hydrogeological and Engineering Geology Expedition Baku, Balagary, str. Natavan 16. (B2) Centre of Complex Researches Baku, Balagary, str. Natavan 16.
PARENT INSTITUTION/MINISTRY	(A) Ministry of Ecology and Natural Resources (B1) Ministry of Ecology and Natural Resources (B2) Ministry of Ecology and Natural Resources
PEOPLE INTERVIEWED AT LABORATORY	(A) Mr Hasanov Aratun, Director General of the Monitoring Centre of Environmental Pollution (B1) Mr Qaralov Baktiyar Asad Ogly, Director (B2) Mr Mamed Gafarov, Director Ms Eldarova Surayya Salam Gizi, Head of Water Laboratory
Sampling and field monitoring needs:	
QUESTION	RESPONSES
Do staffs have training on use of water sampling equipment?	(A) Yes. Every year. (B1) Regular training is provided for the staff. Three level of trainings: - Senior staff trains the new comers. - monthly training - special information trainings
Are there written protocols for the sampling methods/equipment used?	(A) Yes. (B1) Yes.
Do the same staff do the sampling each time?	(A) Yes, the same staffs. (B1) There is a sampling group at all 7 regions. They do sampling each time.
How often do they sample?	(A) At each first week of a month. (B1) Once per year.
Do the staffs that do the sampling also do laboratory analyses?	(A) No. Separate staffs do the analyses. (B1) No. Separate laboratory do the analyses.
Field sampling and monitoring equipment e.g. Friedinger/Ruttner bottle, dissolved oxygen, pH and conductivity meters: record the make, country of origin, assess the state	(A) There are mobile equipment to measure DO, conductivity, pH, salinity, transparency, turbidity and temperature. (B1) Only temperature is measured with thermometer and pH is measured using paper indicator.
How often are they calibrated?	(A) Once a month. (B1) No calibration.
Are standards available + certificates and are the standards cooled and not expired?	(A) Yes. Cooled or kept in separate cabinets. (B1) No standards are used and they are not needed for the measured two parameters.
Is new equipment needed? List what is needed.	(A) Boat. Device for sampling bottom sediment. (B1) Mobiloe toolkits are very much needed at all 7 regions to increase the number of parameters

	measured on site.
Are there vehicles for field sampling and is there a budget for fuel?	(A) Fuel is not a problem. (B1) Fuel is available, however the budget of the Lab is very limited.
Are there cold-boxes, refrigerators to conserve the samples during transit to the laboratories?	(A) Cold-boxes are available for sampling at the Central Lab, but these are in shortage at regional labs. (B1) Cold-boxes are not available. Samples arrive at the water analytical lab of the Centre of the Complex Researches 3-4 days after sampling.
Are samples filtered on site and stabilised with acid?	(A) Samples are not filtered at the sites. (B1) Samples are not filtered at the sites.
Are there sufficient consumables for the sampling to be sustainable e.g. sampling bottles, spare membranes, buffer solutions etc.?	(A) Generally there is no problem with the availability of consumers. However, the budget is very tight. (B1) Generally there is no problem with the availability of consumers. However, the budget is very tight.
What kinds of bottles are used? (plastic for inorganic and glass for organics)	(A) Plastic bottles designed for sampling are used dominantly. Glass bottles are also available for heavy metals analyses. (B1) Commercially used mineral water plastic bottles and for some cases glass bottles are used.
Where are bottles cleaned and is deionised water available for cleaning?	(A) Bottles are cleaned with chromic sulphuric acid and distilled water. (B1) Bottles are cleaned with chromic sulphuric acid and distilled water at the water analytical lab of the Centre of the Complex Researches and make them available for the sampling groups.
Make any other comments on sampling and field equipment especially if you actually go out on a sampling trip.	-
Laboratory analysis needs:	
QUESTION	RESPONSES
Is the fabric of the laboratory sound, i.e. does the roof leak, are the windows broken, is there air conditioning/heating, and are the benches clean and sound and not likely to cause contamination of samples? Is the laboratory also used as an office?	(A) The building is in good condition. It was renovated recently. Heating system works fine. No problem with electricity or water supply. Working tables, and benches looked clean. In some cases, laboratory is separate from office space, but in many other cases, laboratory is used as an office. (B2) The building is in good condition. It was renovated recently. Heating system works fine. No problem with electricity or water supply. Working tables, and benches looked clean. In some cases, laboratory is separate from office space, but in many other cases, laboratory is used as an office.
Are there cooling facilities for standards, organic substances, and storage of samples?	(A) Yes. (B2) Yes.
How constant is the supply of electrical power and voltage fluctuation?	(A) No problem with the power supply. (B2) No problem with the power supply.
Is the equipment sufficient and reliable and capable of producing results that are fit for purpose? The equipment needs for the new neighbour countries engaged in trans-boundary monitoring will need to be capable of matching the analytical performance of the EU25 neighbour(s) or else comparability will be compromised. Equipment needs of the other countries are likely to be less demanding at least in the short to mid-term. List the equipment, approximate age, country of origin	(A) Observed equipment: <ul style="list-style-type: none"> • Liebherr gastro line refrigerator • WGW mobile equipment • HANNA HI 93703 mobile instrument • pH laboratory meter – type 121 • CF-26 • Acidmetr 333 • EL-20 • SHAFa (drying equipment) • Ionometer EV-74 in soil lab

and state. If the equipment is new does/did the manufacturer/supplier provide training?	<ul style="list-style-type: none"> • Microtechnica – Universal Meter M110 • Atomtex (made in Belarus) in radioactive lab • Mass spectrophotometer SVET 500M, VARIAN 4000 BC/MS/MS, IMT-05 (old Russian) • Several new PCs <p>(B2) Observed equipment:</p> <ul style="list-style-type: none"> • AKVILON mobile pH meter (pH410) • Photometer KFK-3 (RU) • Photoelectric colorimeter: KFK-2MP (RU) • Balances • Oven <p>Recived list of equipment:</p> <ul style="list-style-type: none"> • KFK-2MP • KFK-2 (2 pieces) • PH meter Akvilon-410 • PH meter • Analytical balances • Electrical balances • Technical balances VLTK-500 • Thermostat
Are there sufficient consumables for the analytical programmes to be sustainable? Are there refrigerators, incubators, ovens etc., is there access to pure water (distilled/deionised), pure reagents, standards, gases, spare parts for equipment, is there sufficient glassware (plastic) such as beakers, flasks, pipettes? Are there certificates for reagents and standards?	<p>(A) Consumables are generally expensive and available only from imports (RU, BLR, USA, GE, FR).</p> <p>(B2) Generally consumables are available, but the sometime the budget is short to buy them in time.</p>
Are consumables available locally (nationally) or must they be imported, are there import regulations and taxes?	<p>(A) Limited local production. 70-80% of the used consumables are imported. Limited budget to purchase them.</p> <p>(B2) Limited local production. 70-80% of the used consumables are imported. Limited budget to purchase them.</p>
Are there facilities for the protection of employees? (Suction facilities, gas masks, showers)	<p>(A) Only some gloves and gas masks in limited number are available. No other protection facilities are used in the lab.</p> <p>(B2)</p>
How are reagents, etc. disposed? (Neutralization of waste water, collection of chloride and non-chloride substances)	<p>(A) This issue has not been solved yet. No national service provider in this field.</p> <p>(B2) This issue has not been solved yet. The solution is dilution and pouring them to the sewer system. No national service provider in this field.</p>
Make any other comments on the state of the laboratory, its equipment and consumables that arise during the mission.	-
Quality control and data management needs:	
QUESTION	RESPONSES
Is the laboratory accredited under national/international protocols?	<p>(A) The lab is accredited by national standards.</p> <p>(B2) This lab is not accredited, yet. It is planned the lab will be accredited within 6 months.</p>
Are there standard operating procedures? Are they documented?	<p>(A) Yes.</p> <p>(B2) Yes.</p>
How often are certain parameters analysed? And is the equipment calibrated accordingly? (How often?)	<p>(A) Monthly and calibrated as well.</p> <p>(B2) 3-4 days during a 6 month period. The other 6 months the staff has nothing to do.</p>

Does the lab take part in round-robin test?	(A) Yes. Intercalibration with and Academy of Sciences Lab which participate in an ongoing NATO project intercalibration. (B2) No. Once a year State Committee of Standardisation checks the operation of the Lab.
Are quality control charts and records kept so bias and error can be detected early?	(A) Yes. (B2) Yes.
Does staff keep laboratory diaries?	(A) Yes (B2) No.
Are staffs trained on quality control procedures?	(A) Yes. It is done at every six month. (B2) The Head of the Laboratory provides the training fro the new staff members.
Are data screened and checked before being reported? Is this done electronically?	(A) Yes. Two level of checking. The head of the Water Analytical Lab and the Director General of the Centre also check the data. (B2) Measured data are provided for the Complex Hydrogeological and Engineering Geology Expedition, which did the sampling on paper.
What data management system is in place?	(A) The paper-based records are stored in the laboratory. (B1) After receiving records on the analyses the Complex Hydrogeological and Engineering Geology Expedition make the electronic data processing and the recorded data are stored in a computer database.
Are there back-ups and security to protect the data?	(A) No computer recording in the Lab. (B1) Back-ups on CDs, while paper records are archived.
Do the public have access to the data?	(A) Data produced by the Lab are available up on request, but payment is needed for processing the info. (B2) All raw data are sent to the Ministry of Ecology and Natural Resources. Information could be recived only from the Ministry.
What happens to the data after it is generated – is it used for water management purposes? If so – how?	(A) Data produced by this lab go to the Information Centre of the MENP. (B2) Data produced by this lab go to the Information Centre of the MENP.
Make any other comments on quality control, staff, data management and data handling that arise during the mission.	-
<i>Institutional needs:</i>	
QUESTION	RESPONSES
How many staffs are employed in the laboratory? Graduates/support-administrative.	(A) 64 staffs are working at the Centre Laboratory. 54 have university degree. (B2) 80 staffs are working at the Centre of Complex Researches. 75% of them has university degree.
Does the laboratory have a sufficient and sustainable annual budget from regional or central sources?	(A) For basic activities, yes. 75-80% comes from state budget, 20-25% from contracts. (B2) They almost exclusively work for the Complex Hydrogeological and Engineering Geology Expedition under yearly contract.
Can the laboratory generate income by entering the market (e.g. is the government encouraging self-monitoring by dischargers)?	(A) Yes. It is estimated that the Lab receives an additional 20-25% from the market. (B2) All the income of the Lab comes from the contract

	with the Complex Hydrogeological and Engineering Geology Expedition. The Lab is allowed to work for other potential customers, but they have no additional contract at this time.
Are there private laboratories in competition?	(A) There are some labs that are capable of water analyses, which mostly belong to oil companies. (B2) There are some labs that are capable of water analyses, which mostly belong to oil companies.
What is the monthly throughput of samples?	(A) About 66 water samples per month, which are analysed for 53 parameters. (B2) About 1000 samples per year for about 35-40 compounds. The Lab could do 3000 samples per year with the current staff and equipment.
Make any other comments on the sustainability of the laboratory that arise during the mission.	-
Needs Assessment Report compiled by:	János Fehér, Attila Lázár on 18 th Nov 2006.

Annex7. Needs Assessment Questionnaire for Georgia

NEEDS ASSESSMENT CHECK LIST	
COUNTRY	GEORGIA
NAME AND ADDRESS OF LABORATORY	Environmental Pollution Monitoring Department The Centre for Monitoring and Prognostication
PARENT INSTITUTION/MINISTRY	For Laboratory Ministry of Environmental Protection and Natural Resources of Georgia
PEOPLE INTERVIEWED AT LABORATORY	At Laboratory Mr. Omar Kenia (Head of Department) Mr. Alex Tsikaridze (Chief Engineer)
Sampling and field monitoring needs:	
QUESTION	RESPONSES
Do staffs have training on use of water sampling equipment?	Yes.
Are there written protocols for the sampling methods/equipment used?	Yes.
Do the same staff do the sampling each time?	Yes, there is a team for sampling.
How often do they sample?	Once a month
Do the staffs that do the sampling also do laboratory analyses?	Yes.
Field sampling and monitoring equipment e.g. Friedinger/Ruttner bottle, dissolved oxygen, pH and conductivity meters: record the make, country of origin, assess the state	There are mobile equipment to measure DO, conductivity, pH, salinity, transparency, turbidity and temperature.
How often are they calibrated?	Always before field sampling (once a month)
Are standards available + certificates and are the standards cooled and not expired?	Yes. Cooled. Standards will expire this year.
Is new equipment needed? List what is needed.	Mobile toolkit + standards.
Are there vehicles for field sampling and is there a budget for fuel?	Only the Centre has some cars, which are used for all purposes. Sometimes there is a conflict to get a car, and in these cases, private cars are used. Fuel is not a problem.
Are there cold-boxes, refrigerators to conserve the samples during transit to the laboratories?	3 old cold-boxes that are used with dry-ice. There is no mobile refrigerator.
Are samples filtered on site and stabilised with acid?	Samples are filtered and stabilised. Filtering is done by using paper filters, which take considerable time. There is a need for membranes to shorten the filtering time.
Are there sufficient consumables for the sampling to be sustainable e.g. sampling bottles, spare membranes, buffer solutions etc.?	No.
What kinds of bottles are used? (plastic for inorganic and glass for organics)	Only plastic bottles are used. No glass bottles are available.
Where are bottles cleaned and is deionised water available for cleaning?	Plastic bottles are cleaned with chromic sulphuric acid and distilled water.
Make any other comments on sampling and field equipment especially if you actually go out on a sampling trip.	-
Laboratory analysis needs:	
Concentrate on the main, central laboratory in the capital. Make some assessment of the regional laboratories if possible on a separate sheet	
QUESTION	RESPONSES
Is the fabric of the laboratory sound, i.e. does the roof	The building is in bad condition, but it is under

leak, are the windows broken, is there air conditioning/heating, and are the benches clean and sound and not likely to cause contamination of samples? Is the laboratory also used as an office?	reconstruction. A new heating system is already implemented. Electricity is ok; water supply is ok. Working tables, and benches seemed to be clean.
Are there cooling facilities for standards, organic substances, and storage of samples?	Yes.
How constant is the supply of electrical power and voltage fluctuation?	No problem with the power supply.
<p>Is the equipment sufficient and reliable and capable of producing results that are fit for purpose? The equipment needs for the new neighbour countries engaged in trans-boundary monitoring will need to be capable of matching the analytical performance of the EU25 neighbour(s) or else comparability will be compromised. Equipment needs of the other countries are likely to be less demanding at least in the short to mid-term. List the equipment, approximate age, country of origin and state. If the equipment is new does/did the manufacturer/supplier provide training?</p>	<p>The mission team was told that approximately 80% of the equipment is outdated, but working properly.</p> <p>Analytical balances: 1 VLK-500 (1987, RU); 4 German (2002), 1 Poland (1997) 4 Centrifuges: OPN-3 (1992) 1 Thermostat A-48 (1991) 1 Biological thermostat (2002) 2 Thermostats (2003) (1 LIEBHERR profi line was seen, 1 SNOL-3,5 was seen) 1 BOD Thermostat (2003) 1 Distillator ED-4-2 (1988) 2 Air conditioner BK-1500 (1989) 4 pH meter pH-673 (1997, RU) 1 Muffle furnace (1987) 2 Photocolorimeter KFK-2 (1991, 1999) 2 Automatic sampler taker (for water sampling) (2003, 2004) 1 Spectrophotometer CF-46 (1989) 1 Ionometer U-115 (1990) 2 Conductometer KEL-1M (1995) 1 Fluorometer AN-1 (1998) 1 Fluorometer KVANT-7 (1992) 1 Light photometer PFP (1991) 1 AAS GBC-SB900 Scientific Equipment (1989) (Australian) (this was modified to work with propane gas. The equipment is calibrated.) 1 Chromatograph TSVET-500M (FPD, FID) (1997) 1 Chromatograph LXM-80 (TCD) (1990) 1 Chromatograph TSVET-550M (ECD, FID) (1986) also chromatograph accessories were seen: IMT-05, RTI-36, IPC-07, SAA-06 1 AAS Perkin Elmer Analyst-200 MHS-15 (2004) (it has passed the intercalibration exercise)</p> <p>Mobile equipments: 1 HORIBA U-10 (2003) 2 85 YSI (ox, cond., salinity, temp) (2003, USA) 1 pH meter YSI 60 (pH, temp) (2003, USA)</p> <p>2 Freezers (2003) 1 Auto "niva" (2004) 4 personal computers (Pentium-IV) (2003, 2004)</p> <p>----- <u>Other equipments that were seen, but not found in the received list (maybe not working any more):</u> Liebherr gastro line BINDER oven LKB Biochrom Novaspec II. Photoelectric colorimeter type KF77 (Poland) Mobile equipment: WTW Multi 340 i</p>
Are there sufficient consumables for the analytical programmes to be sustainable? Are there refrigerators, incubators, ovens etc., is there access to pure water (distilled/deionised), pure reagents, standards, gases, spare parts for equipment, is there sufficient glassware (plastic) such as beakers, flasks, pipettes? Are there certificates for reagents and standards?	Consumables are not sufficient. (e.g. there is only 1 modern pipette). There is a need for modernisation.

Are consumables available locally (nationally) or must they be imported, are there import regulations and taxes?	No local production. Imported consumables, however, can be bought in Georgia.
Are there facilities for the protection of employees? (Suction facilities, gas masks, showers)	No. Only in case of pesticide measurements when masks are available. Special sampling cloths are also available.
How are reagents, etc. disposed? (Neutralization of waste water, collection of chloride and non-chloride substances)	This issue has not been solved yet.
Make any other comments on the state of the laboratory, its equipment and consumables that arise during the mission.	It was observed that potted plants are present in the laboratories that are not consistent with modern management practices.
Quality control and data management needs:	
QUESTION	RESPONSES
Is the laboratory accredited under national/international protocols?	No yet accredited under national standards. Accreditation will be received probably by the end of this year. The laboratory participates in an intercalibration exercise coordinated by a laboratory from Monaco (financed by the Black Sea Commission). The laboratory has passed the proficiency test to analyse trace element in marine sediment samples.
Are there standard operating procedures? Are they documented?	Yes. The updated methodologies are similar to the ISO standards.
How often are certain parameters analysed? And is the equipment calibrated accordingly? (How often?)	Almost every day. Depending on the equipment, it is calibrated every 6-12 months. Once a year, all equipment is calibrated by the Institute of Metrology and Standardisation.
Does the lab take part in round-robin test?	Yes.
Are quality control charts and records kept so bias and error can be detected early?	Yes.
Does staff keep laboratory diaries?	No.
Are staffs trained on quality control procedures?	Yes, in the frame of a TACIS program.
Are data screened and checked before being reported? Is this done electronically?	Yes, the analytical division, which is separate from the laboratory but have the same background, checks the records.
What data management system is in place?	The paper-based records are stored electronically in the laboratory in MS Excel format. These Excel files are sent to the data management unit of the Centre for further use.
Are there back-ups and security to protect the data?	No backups of the excel sheets in the laboratory. No information on the back-up system of the data management unit of the Centre.
Do the public have access to the data?	All records analysed by the laboratory is published in Annual Report on Surface Water Pollution by the CMP. Everyone can get a copy of the booklet upon request.
What happens to the data after it is generated – is it used for water management purposes? If so – how?	Some publications are produced by the CMP. Some information will be available on the web as well.
Make any other comments on quality control, staff, data management and data handling that arise during the mission.	The storage and back-ups of data are not well established. The further use of data is not clearly described.
Institutional needs:	
QUESTION	RESPONSES
How many staffs are employed in the laboratory? Graduates/support-administrative.	12 staff members are in the laboratory, all have university degree.
Does the laboratory have a sufficient and sustainable annual budget from regional or central sources?	40% of the yearly budget comes from the state.
Can the laboratory generate income by entering the market (e.g. is the government encouraging self-monitoring by dischargers)?	Yes, it is estimated to receive an additional 3-5% from the market.
Are there private laboratories in competition?	Yes, 2 private laboratories are already operating in Georgia beside the 5 public laboratories.
What is the monthly throughput of samples?	About 56 water samples per month.

Make any other comments on the sustainability of the laboratory that arise during the mission.	-
Needs Assessment Report compiled by:	János Fehér, Attila Lázár on 19 th Oct 2006.

Annex8. Needs Assessment Questionnaire for Kazakhstan

NEEDS ASSESSMENT CHECK LIST	
COUNTRY	Kazakhstan
NAME AND ADDRESS OF LABORATORY	Astana
PARENT INSTITUTION/MINISTRY	Kazhydromet
PEOPLE INTERVIEWED AT LABORATORY	
Sampling and field monitoring needs:	
QUESTION	RESPONSE
Do staff have training on use of water sampling equipment?	4 men do the sampling. They are experienced, but if new staff need training the experienced staff go with them to train them
Are there written protocols for the sampling methods/equipment used?	Yes
Do the same staff do the sampling each time? How often do they sample?	Yes 27 sample points sampled once per month
Do the staff who do the sampling also do laboratory analyses?	Yes
Field sampling and monitoring equipment e.g. Friedinger/Ruttner bottle, dissolved oxygen, pH and conductivity meters: record the make, country of origin, assess the state	Only temperature in the field. They add chemicals to preserve the samples and basic measurements i.e. pH, EC, DO are carried out within 8 hours of taking the sample
How often are they calibrated?	
Are standards available + certificates and are the standards cooled and not expired?	Consumables are available (companies in Astana) and the lab has the money and support to buy whatever they need.
Is new equipment needed? List what is needed.	Field measurement tools are required i.e. pH, DO, EC, temp etc.
Are there vehicles for field sampling and is there a budget for fuel?	Yes no problems with vehicles, petrol or money
Are there cold-boxes, refrigerators to conserve the samples during transit to the laboratories?	Yes
Are samples filtered on site and stabilised with acid?	According to the KZ standards samples can be filtered in the laboratory. In winter it is too cold in Astana to carry out filtering in the field
Are there sufficient consumables for the sampling to be sustainable e.g. sampling bottles, spare membranes, buffer solutions etc.? What kind of bottles are used? (plastic for anorganics and glass for organics)	Yes, consumables and equipment are available and the lab has the money and support to buy whatever they need. They have glass and plastic bottles for each determinand.
Where are bottles cleaned and is deionised water available for cleaning?	Yes using distilled water
Make any other comments on sampling and field equipment especially if you actually go out on a sampling trip.	
Laboratory analysis needs:	
<i>Concentrate on the main, central laboratory in the capital. Make some assessment of the regional laboratories if possible on a separate sheet</i>	
QUESTION	RESPONSE
Is the fabric of the laboratory sound, i.e. does the roof leak, are the windows broken, is there air conditioning/heating, are the benches clean and sound and not likely to cause contamination of samples? Is the laboratory also used as an office? Is it too clean (not in use)?	Laboratory in very good condition. Building inside and out of a high standard. Lab is clean and organised. People were working while we were there and samples were being dealt with. The laboratory could be very cold in winter?
Are there cooling facilities for standards, organic substances, storage of samples?	Yes fridges available
How constant is the supply of electrical power and voltage fluctuation?	Very good, rarely goes off and only for an hour or so.
Is the equipment sufficient and reliable and capable of	Old devices which will be exchanged very soon. New

<p>producing results that are fit for purpose? The equipment needs for the new neighbour countries engaged in trans-boundary monitoring will need to be capable of matching the analytical performance of the EU25 neighbour(s) or else comparability will be compromised. Equipment needs of the other countries are likely to be less demanding at least in the short to mid-term. List the equipment, approximate age, country of origin and state. If the equipment is new does/did the manufacturer/supplier provide training?</p>	<p>equipment is expected to be delivered within 3 weeks from St. Petersburg: Spektrophotometer GOMIL (Belarus, old, will be replaced) Photometer КФК-3 (30 years old, will be replaced) pH-121 (Russia, 30 years?) pH-150 (Handheld, 10 years?) Fluorimeter LUMEX Fluorat 02-3M (Russian, 10–15 years) Spectrometer PA-915+ (for Hg measurements) New equipment: Gas Chromatograph PerkinElmar Clarus 500. Atomic Absorption Spectrophotometer LAT NovAA 300 Training in RU was provided for the Chromatograph and manuals for all devices are available in RU.</p>
<p>Are there sufficient consumables for the analytical programmes to be sustainable? Are there refrigerators, incubators, ovens etc., is there access to pure water (distilled/deionised), pure reagents, standards, gases, spare parts for equipment, is there sufficient glassware (plastic) such as beakers, flasks, pipettes? Are there certificates for reagents and standards</p>	<p>Yes, consumables and equipment are available and the lab has the money and support to buy whatever they need.</p>
<p>Are consumables available locally (nationally) or must they be imported? Are there import regulations and taxes?</p>	<p>They are available in Astana and can also be purchased from Russia</p>
<p>Are there facilities for the protection of employees? suction facilities, gas masks, showers,</p>	<p>Yes there are showers, masks, glasses, fume hoods etc.</p>
<p>How are reagents etc. disposed? (neutralization of waste water, collection of chloride and non-chloride substances).</p>	<p>There are no specific facilities in Astana. They say that they neutralise the waste and dispose of it via the sewer</p>
<p>Make any other comments on the state of the laboratory, its equipment and consumables that arise during the mission.</p>	
<p>Quality control and data management needs:</p>	
<p>QUESTION</p>	<p>RESPONSE</p>
<p>Is the laboratory accredited under national/international protocols?</p>	<p>Yes, nationally. It is an attested lab (1st step). They are allowed to work for the legislation. The accreditation system has only recently come in and they comply, but as yet have not had a certificate.</p>
<p>Are there standard operating procedures? Are they documented?</p>	<p>Yes</p>
<p>How often are certain parameters analysed? and is the equipment calibrated accordingly (how often)?</p>	<p>42 parameters analysed once per month. 27 samples per month. The equipment is calibrated once a month when the samples are received and before the analysis made.</p>
<p>Does the lab take part in round-robin tests?</p>	<p>On a few occasions samples may be sent to various (3) labs and the results compared. This occurs particularly if the control function analyses spots a problem</p>
<p>Are quality control charts and records kept so bias and error can be detected early?</p>	<p>Yes quality is assessed, but quality charts and error and bias do not appear to be assessed/produced</p>
<p>Are staff trained on quality control procedures?</p>	<p>Yes to the basic level that the laboratory runs</p>
<p>Does staff keep laboratory diaries?</p>	
<p>Are data screened and checked before being reported? Is this done electronically?</p>	<p>Head of laboratory checks and assesses all data</p>
<p>What data management system is in place?</p>	<p>Electronic records e-mailed to ministry. Also hard copies in laboratory and disks made of all electronic files</p>
<p>Are there <u>back-ups</u> and security to protect the data?</p>	<p>As above</p>
<p>Do the public have access to the data?</p>	<p>No. they may only get access to monthly and annual 'state of the environment reports' which contain summarised data</p>
<p>What happens to the data after it is generated – is it</p>	

used for water management purposes? If so – how?	
Make any other comments on quality control, staff, data management and data handling that arise during the mission.	
<i>Institutional needs:</i>	
QUESTION	RESPONSE
How many staff are employed in the laboratory? Graduates/support-administrative.	11 in the lab, 6 with water. 4 high education regarding lab 3 high education regarding water
Does the laboratory have a sufficient and sustainable annual budget from regional or central sources?	Salary is small, but yes
Can the laboratory generate income by entering the market (e.g. is the government encouraging self-monitoring by dischargers)?	Yes about 40% of samples come from commercial sources, i.e. the oil industry and commercial organisations that may have discharges to water
Are there private laboratories in competition?	Not in Astana
What is the monthly throughput of samples?	Regular monitoring + 40% of total (commercial)
Make any other comments on the sustainability of the laboratory that arise during the mission.	They would like to have more GC and photometer equipment. They would also like more mobile laboratory equipment
Needs Assessment Report compiled by:	NS/AS

Annex9. Needs Assessment Questionnaire for Kyrgyz Republic

NEEDS ASSESSMENT CHECK LIST	
COUNTRY	KG
NAME AND ADDRESS OF LABORATORY	Bishkek
PARENT INSTITUTION/MINISTRY	Kyrgyzhydromet
PEOPLE INTERVIEWED AT LABORATORY	Maria Kuagula
Sampling and field monitoring needs:	
QUESTION	RESPONSE
Do staff have training on use of water sampling equipment?	The staff used have over 30 year experience so they do not have any continued formal training
Are there written protocols for the sampling methods/equipment used?	Yes (Soviet protocols)
Do the same staff do the sampling each time?	Yes
How often do they sample?	10 sites, with 22 samples once per quarter
Do the staff who do the sampling also do laboratory analyses?	Yes
Field sampling and monitoring equipment e.g. Friedinger/Ruttner bottle, dissolved oxygen, pH and conductivity meters: record the make, country of origin, assess the state	They have equipment from Japan to monitor pH, Conductivity and DO at the sample site. However, this equipment is not in use as yet. They have chemicals to fix samples, but samples are collected using plastic bottles only. Glass bottles are available in the lab.
How often are they calibrated?	No calibration on temperature equipment. In general lab equipment calibrated once per year through a national body. Japanese equipment (funded by Japanese project from the Japanese International Cooperation Agency (JICA)) calibrated each time it is used.
Are standards available + certificates and are the standards cooled and not expired?	Consumables are available for the next five years. Cool boxes and plastic bottles are available, but no glass bottles available for field samples
Is new equipment needed? List what is needed.	Field measurement tools are required i.e. pH, DO, conductivity, temp etc.
Are there vehicles for field sampling and is there a budget for fuel?	The car is old (25 years) and there is a problem with the budget for fuel. There is only enough money to buy fuel for one more year
Are there cold-boxes, refrigerators to conserve the samples during transit to the laboratories?	2 cold-boxes
Are samples filtered on site and stabilised with acid?	Samples are stabilised in the field and filtered in the laboratory.
Are there sufficient consumables for the sampling to be sustainable e.g. sampling bottles, spare membranes, buffer solutions etc.? What kind of bottles are used? (plastic for inorganics and glass for organics)	Yes, consumables and equipment are available for the next five years. They have glass and plastic bottles for laboratory use
Where are bottles cleaned and is deionised water available for cleaning?	Yes using distilled water
Make any other comments on sampling and field equipment especially if you actually go out on a sampling trip.	
Laboratory analysis needs:	
<i>Concentrate on the main, central laboratory in the capital. Make some assessment of the regional laboratories if possible on a separate sheet</i>	
QUESTION	RESPONSE
Is the fabric of the laboratory sound, i.e. does the roof leak, are the windows broken, is there air conditioning/heating, are the benches clean and sound and not likely to cause contamination of samples? Is the laboratory also used as an office? Is it too clean (not in use)?	The new lab funded by the Japanese appears to be fully equipped and in good working order. The older existing laboratory is more dated and requires modernising. However the structure of the building is in moderate repair and there are no obvious leaks or damage
Are there cooling facilities for standards, organic substances, storage of samples?	Yes fridges available
How constant is the supply of electrical power and	Good, and they have voltage fluctuation protection on

voltage fluctuation?	the computers.
Is the equipment sufficient and reliable and capable of producing results that are fit for purpose? The equipment needs for the new neighbour countries engaged in trans-boundary monitoring will need to be capable of matching the analytical performance of the EU25 neighbour(s) or else comparability will be compromised. Equipment needs of the other countries are likely to be less demanding at least in the short to mid-term. List the equipment, approximate age, country of origin and state. If the equipment is new does/did the manufacturer/supplier provide training?	<ul style="list-style-type: none"> - Breeding reactors for DOC - pH-meter иономер И-130 (old) - pH-meter универсальный Иономер ЭВ-74 (very old) - Spektrophotometer Spekol-21 - Fluorescence Spektrophotometer Shimadzu RF-1501 (only for water quality at rivers - currently not in use) <p>Room for detection of oil. Formerly pesticides but no chemicals and devices any more. Room for phenole analyses New room (very new equipment)</p> <ul style="list-style-type: none"> - 2 PCs (1 for digitising data, 1 for the TA4) - томь TA4 (for heavy metals) - UV-visible Spektrophotometer Shimadzu UV-1700 (main device) - Balance Santorius CP224S and 2202S - pH, t, EC device for the sampling
Are there sufficient consumables for the analytical programmes to be sustainable? Are there refrigerators, incubators, ovens etc., is there access to pure water (distilled/deionised), pure reagents, standards, gases, spare parts for equipment, is there sufficient glassware (plastic) such as beakers, flasks, pipettes? Are there certificates for reagents and standards	Yes, consumables and equipment are available for the next five years. The new Japanese funded lab appears to be in full working order. If equipment breaks down it can be fixed in Kyrgyzstan, but money is required for repairs.
Are consumables available locally (nationally) or must they be imported? Are there import regulations and taxes?	The Japanese provided everything required for five years, but they are also available from Russia
Are there facilities for the protection of employees? suction facilities, gas masks, showers,	Only gloves are available and they could do with more of those.
How are reagents etc. disposed? (neutralization of waste water, collection of chloride and non-chloride substances).	There are no specific facilities. They say there is a 2m deep pit on site in which the chemicals are disposed without neutralisation (only dilution with tap water)
Make any other comments on the state of the laboratory, its equipment and consumables that arise during the mission.	
Quality control and data management needs:	
QUESTION	RESPONSE
Is the laboratory accredited under national/international protocols?	Not at present, but they aim to gain accreditation with the Japanese equipment in the new room they have.
Are there standard operating procedures? Are they documented?	There are Soviet and Japanese procedures and these have been translated into Russian
How often are certain parameters analysed? and is the equipment calibrated accordingly (how often)?	32 parameters analysed every four months. 10 sites, with 22 samples once per quarter. In general lab equipment calibrated once per year through a national body. Japanese equipment calibrated each time it is used.
Does the lab take part in round-robin tests?	In general every two years the labs compare results, but when a major incident occurs all national labs (4 of them) test the samples and the results are compared
Are quality control charts and records kept so bias and error can be detected early?	Yes quality is assessed, but only in the form of duplicate samples and internal standards. Some samples are analysed by 2 different persons and compared. Results are recorded, but we did not see them
Are staff trained on quality control procedures?	Yes to the basic level that the laboratory runs. Also the staff have 30 years experience to call on
Does staff keep laboratory diaries?	For titration all steps are written down.
Are data screened and checked before being reported? Is this done electronically?	Head of laboratory checks and assesses all data
What data management system is in place?	Electronic records and hard copies (computer drives and CDs)
Are there <u>back-ups</u> and security to protect the data?	As above
Do the public have access to the data?	No

What happens to the data after it is generated – is it used for water management purposes? If so – how?	It is used to generate quarterly reports and the annual 'state of environment' reports
Make any other comments on quality control, staff, data management and data handling that arise during the mission.	
<i>Institutional needs:</i>	
QUESTION	RESPONSE
How many staff are employed in the laboratory? Graduates/support-administrative.	3 (higher chemical school)
Does the laboratory have a sufficient and sustainable annual budget from regional or central sources?	Obtaining money for petrol for sampling car is a problem. The salary is small (~\$50/month), but will be maintained. However, there is no scope for a pay increase.
Can the laboratory generate income by entering the market (e.g. is the government encouraging self-monitoring by dischargers)?	No
Are there private laboratories in competition?	There is one (UK firm) laboratory, but it relates specifically to the gold industry
What is the monthly throughput of samples?	22 samples Quarterly only
Make any other comments on the sustainability of the laboratory that arise during the mission.	
Needs Assessment Report compiled by:	NS/AS

Annex10. Needs Assessment Questionnaire for Tadjikistan

NEEDS ASSESSMENT CHECK LIST	
COUNTRY	Tajikistan
NAME AND ADDRESS OF LABORATORY	Analytic laboratory 47 Shevchenko Str. 734025, Dushanbe, TAJIKISTAN Tel: (+992 37) 223-18-21 Fax: (+992 37) 221-55-22 Website: http://www.meteo.tj E-mail: office@meteo.tj
PARENT INSTITUTION/MINISTRY	Agency on Hydrometeorology of the State Committee of Environment Protection and Forestry
PEOPLE INTERVIEWED AT LABORATORY	Mrs Irina Bravicheva, Head of Laboratory
Sampling and field monitoring needs:	
QUESTION	RESPONSE
Do staff have training on use of water sampling equipment?	Samples are taken by one person at the river which is flowing through the town and he is trained. Before people are allowed to take the samples alone they have to study the written sampling manuals and they have to accompany experienced staff.
Are there written protocols for the sampling methods/equipment used?	Yes
Do the same staff do the sampling each time? How often do they sample?	Yes, at 10 sampling points once per month
Do the staff who do the sampling also do laboratory analyses?	Yes
Field sampling and monitoring equipment e.g. Friedinger/Ruttner bottle, dissolved oxygen, pH and conductivity meters: record the make, country of origin, assess the state	MERCK express method for Temp, pH, EC, O ₂ (few years old, looks very new)
How often are they calibrated?	Once per year
Are standards available + certificates and are the standards cooled and not expired?	Standards are already expired (e.g. 2001, 2005) and not cooled. The currently available consumables allow for one more year of analysis.
Is new equipment needed? List what is needed.	Device for taking samples is very old and would be needed (batometer)
Are there vehicles for field sampling and is there a budget for fuel?	A car is available but gasoline is rare. Sometimes the sampling will be done by car, sometimes by public transport. This is the reason why the lab gets only samples from 2 regions (close to Dushanbe) but currently no samples from 2 other regions.
Are there cold-boxes, refrigerators to conserve the samples during transit to the laboratories?	No.
Are samples filtered on site and stabilised with acid?	No. Samples are analysed the same day.
Are there sufficient consumables for the sampling to be sustainable e.g. sampling bottles, spare membranes, buffer solutions etc.? What kind of bottles are used? (plastic for anorganics and glass for organics)	Sampling bottles = empty plastic mineral water bottles. Former Russian equipment needed 10l/sample, the MERCK test kits need 0.5l.
Where are bottles cleaned and is deionised water available for cleaning?	Cleaned with self-distilled water.
Make any other comments on sampling and field equipment especially if you actually go out on a sampling trip.	
Laboratory analysis needs:	
<i>Concentrate on the main, central laboratory in the capital. Make some assessment of the regional laboratories if possible on a separate sheet</i>	
QUESTION	RESPONSE
Is the fabric of the laboratory sound, i.e. does the roof leak, are the windows broken, is there air conditioning/heating, are the benches clean and sound and not likely to cause contamination of samples? Is the laboratory also used as an office? Is it too clean (not in use)?	The building is quite basic but without major deficits. The lab looks as being in use. Some rooms have air condition but it was off during the visit as there was no activity in the lab (Cooling is rather for the employees than for the equipment). The office of the head of lab is in a neighbouring room

	to the lab.
Are there cooling facilities for standards, organic substances, storage of samples?	In principle there is refrigerating facility for the lab of water and air. But, samples are analysed at the same day for the critical (biological) parameters (e.g. nutrients). The remaining parameters are analysed during the week. The samples are in principle not stored in a cool place.
How constant is the supply of electrical power and voltage fluctuation?	Usually OK, only in winter-time there is sometimes no supply. No problem with voltage fluctuation.
Is the equipment sufficient and reliable and capable of producing results that are fit for purpose? The equipment needs for the new neighbour countries engaged in trans-boundary monitoring will need to be capable of matching the analytical performance of the EU25 neighbour(s) or else comparability will be compromised. Equipment needs of the other countries are likely to be less demanding at least in the short to mid-term. List the equipment, approximate age, country of origin and state. If the equipment is new does/did the manufacturer/supplier provide training?	The main devices are German and Swiss and rather new (3 years) and coming from international projects. New equipment (~3 years old, very good state): Photometer MERCK SQ 118 Photometer MERCK NOVA 60 Thermoreactor MERCK TR 200 Thermoreactor MERCK TR 320 Precision balance KERN PRS 620-3 Conductivity cell WTW TetraCon 325 Spectrofluorometer Shimadzu RF-1502 Manuals in German and English and partly in Russian available. There was training for the equipment within the international projects. Old equipment (~30 years old): pH-Meter pH-673.M (Russian) Conductivity cell Radelkis TYPE OK-102/1 (Hungary) Photometer КФК-2 (1978, RU) Water distillery One old Russian chromatograph no more in use.
Are there sufficient consumables for the analytical programmes to be sustainable? Are there refrigerators, incubators, ovens etc., is there access to pure water (distilled/deionised), pure reagents, standards, gases, spare parts for equipment, is there sufficient glassware (plastic) such as beakers, flasks, pipettes? Are there certificates for reagents and standards	Consumables (and equipment) are available from a Swiss project and they last for 1 more year. No plan for the future. Few refrigerators. Water is distilled in the lab. Reagents and standards from the test kits are expired and not stored in optimal temperature. Packages say 25°C as a max for storage and on the day of visit it had 35°C outside and no air-condition inside. Glassware is very difficult to get and expensive. At the moment there is enough available. There are no specialists available who can repair broken equipment.
Are consumables available locally (nationally) or must they be imported? Are there import regulations and taxes?	Consumables must be imported. Shortage only depends on non-availability of money.
Are there facilities for the protection of employees? suction facilities, gas masks, showers,	2 suction facilities.
How are reagents etc. disposed? (neutralization of waste water, collection of chloride and non-chloride substances).	Where it is allowed it is disposed via the water sewer. Hazardous substances are collected and dumped (buried) within the territory of the lab.
Make any other comments on the state of the laboratory, its equipment and consumables that arise during the mission.	
Quality control and data management needs:	
QUESTION	RESPONSE
Is the laboratory accredited under national/international protocols?	All state labs are accredited and there is no private lab.
Are there standard operating procedures? Are they documented?	Only the test kits are used and there is documentation available in Russian.
How often are certain parameters analysed? and is the equipment calibrated accordingly (how often)?	50 samples / month (less in winter as it is more difficult to receive samples). Usually 34 parameters per sample, all with express test kits. Calibrated once per year.
Does the lab take part in round-robin tests?	Not now. In former Russian period this happened usual 2 times/a
Are quality control charts and records kept so bias and error can be detected early?	No. Every sample is analysed twice.

Are staff trained on quality control procedures?	Head of lab advises the staff and is responsible for the equipment.
Does staff keep laboratory diaries?	No
Are data screened and checked before being reported? Is this done electronically?	Every sample is analysed twice. Screening is done by eye (expert judgement) of head of lab, no computer. Repetition of analyses in case of doubts.
What data management system is in place?	Paper. Lab enters the data in an initial paper. This paper is transmitted to the Department of Information of TajikHydromet and data are copied by hand to the (monthly?) journal and entered into a PC. The initial paper is returned to the lab and kept in the room of the head of lab. The Dept. of Information enters the data into a computer and uses the data for preparing annual reports for the State Committee. The data are not electronically available in the lab and reports can be received from the Dept. of Information upon request.
Are there <u>back-ups</u> and security to protect the data?	No
Do the public have access to the data?	No
What happens to the data after it is generated – is it used for water management purposes? If so – how?	Issue of the State Committee
Make any other comments on quality control, staff, data management and data handling that arise during the mission.	
<i>Institutional needs:</i>	
QUESTION	RESPONSE
How many staff are employed in the laboratory? Graduates/support-administrative.	1 head, 3 employees (who also do the analyses for radio nuclides - Gamma-Rays)
Does the laboratory have a sufficient and sustainable annual budget from regional or central sources?	TajikHydromet decides how much money is spent for the lab.
Can the laboratory generate income by entering the market (e.g. is the government encouraging self-monitoring by dischargers)?	Yes. But happens only 1-2 times per year
Are there private laboratories in competition?	No
What is the monthly throughput of samples?	50
Make any other comments on the sustainability of the laboratory that arise during the mission.	
Needs Assessment Report compiled by:	Names and date: Andreas Scheidleder, Neal Sorokin

NEEDS ASSESSMENT CHECK LIST	
COUNTRY	UZBEKISTAN
NAME AND ADDRESS OF LABORATORY	(A) State Inspection for Analytical Control (B) Uzhydromet laboratory of environmental pollution monitoring
PARENT INSTITUTION/MINISTRY	(A) State Committee for Nature Protection (B) Cabinet of Ministers of the Republic of Uzbekistan
PEOPLE INTERVIEWED AT LABORATORY	(A) Mr Sadikov Kamaledin, Deputy Head and Dr Simya Madamaeva, Head of the analytical laboratory. (B) Gulnara Zubkova, Chief of Environmental Pollution Monitoring Service Anna Galjachuk, Head of Laboratory of Environmental Pollution Monitoring
Sampling and field monitoring needs:	
QUESTION	RESPONSES
Do staff have training on use of water sampling equipment?	(A) Yes, every year. (B) Yes, every year
Are there written protocols for the sampling methods/equipment used?	(A) Yes. (B) Yes
Do the same staff do the sampling each time?	(A) Yes, one man does the sampling. (B) There is a specialised team of 3 staff members who do the sampling.
How often do they sample?	(A) Once per three month period. (B) Once per month.
Do the staffs that do the sampling also do laboratory analyses?	(A) Yes. He is involved in the analytical work as well. (B) No, the sampling team is not involved in analytical work.
Field sampling and monitoring equipment e.g. Friedinger/Ruttner bottle, dissolved oxygen, pH and conductivity meters: record the make, country of origin, assess the state	(A) There are test kits to measure DO, pH, alkalinity, and temperature. (B) Only a few parameters are measured on the field (CO2, temperature, odour). No equipment used.
How often are they calibrated?	(A) Before the measurements. (B) Not relevant as they do not use equipment that needs calibration.
Are standards available + certificates and are	(A) Yes. Cooled or kept in separate cabinets.

the standards cooled and not expired?	(B) For CO ₂ measurements yes. No cooling.
Is new equipment needed? List what is needed.	(A) Equipment to measure conductivity in the field. (B) Test kits for field measurements would help more effective sampling and field analysis.
Are there vehicles for field sampling and is there a budget for fuel?	(A) Cars are available. Fuel is not a problem. (B) Cars are available. Fuel is not a problem.
Are there cold-boxes, refrigerators to conserve the samples during transit to the laboratories?	(A) Cold-boxes are available for sampling. (B) Cold-boxes are not available..
Are samples filtered on site and stabilised with acid?	(A) Samples are not filtered at the sites. Stabilisation is done at the sampling sites. (B) No filtering on the site.
Are there sufficient consumables for the sampling to be sustainable e.g. sampling bottles, spare membranes, buffer solutions etc.?	(A) Generally there is no problem with the availability of consumables. However, the budget is tight and sometimes delivery of such things by the supply company takes a long time. (B) In general no problem with the supply of the consumables.
What kinds of bottles are used? (plastic for inorganic and glass for organics)	(A) 2 litre Plastic bottles designed for sampling are used. Glass bottles are also available. (B) Plastic bottles manufactured for sampling purposes are used. Glass bottles are also available.
Where are bottles cleaned and is deionised water available for cleaning?	(A) Bottles are cleaned with chromic sulphuric acid and distilled water. (B) Bottles are cleaned with chromic sulphuric acid and distilled water.
Make any other comments on sampling and field equipment especially if you actually go out on a sampling trip.	-
Laboratory analysis needs:	
Concentrate on the main, central laboratory in the capital. Make some assessment of the regional laboratories if possible on a separate sheet	
QUESTION	RESPONSES
Is the fabric of the laboratory sound, i.e. does the roof leak, are the windows broken, is there air conditioning/heating, and are the benches clean and sound and not likely to cause contamination of samples? Is the laboratory also used as an office?	(A) The building is in good condition. Heating and cooling systems work. No problem with electricity or water supply. Working tables, and benches looked clean. In some cases, laboratory is separate from office space but in cases laboratory is used as an office as well. (B) The building is in an acceptable condition. Heating need to be fixed. Maintenance work is

	scheduled.
Are there cooling facilities for standards, organic substances, and storage of samples?	(A) Yes. There are separate refrigerators for standards and samples. (B) Yes. Refrigerator for samples and standards.
How constant is the supply of electrical power and voltage fluctuation?	(A) No problem with the power supply. (B) No problem with the power supply.
Is the equipment sufficient and reliable and capable of producing results that are fit for purpose? The equipment needs for the new neighbour countries engaged in trans-boundary monitoring will need to be capable of matching the analytical performance of the EU25 neighbour(s) or else comparability will be compromised. Equipment needs of the other countries are likely to be less demanding at least in the short to mid-term. List the equipment, approximate age, country of origin and state. If the equipment is new does/did the manufacturer/supplier provide training?	(A) Received list of equipment: <ul style="list-style-type: none"> • Photometer, KFK-3, USSR, 1991 • Photometer, KFK-2, USSR, 1991 • Ionometer, JB-74, USSR, 1982 • SPECOL 1100 (spectrophotometer) • 2 balances • Spectrophotometer, SPECOL-11, Germany 1990 • Spectrophotometer, CF-46, USSR 1991 • PH-meter, MP220m Mettler Toledo, Germany, 2004 • Chromathograph 3700, USSR, 1990 • Atomic adsorption spectrophotometer, pAA 6501, Japan, 1994 • Gas chromathograph, Xpom-5, Czechoslovakia, 1992 • Fluorometer, XBAMIT, Russia, 1992 (B) List derived from inspection. <ul style="list-style-type: none"> • Refrigerator (storage of samples and reagent, USSR, Old - +/- 30 yrs • Water still, USSR, Old • Analytical balance, USSR, Old - +/- 30 yrs • pH meter N-115, USSR, Old - +/- 30 yrs • pH meter 573-M, USSR, Old - +/- 30 yrs • Conductivity meter, USSR, Old - +/- 30 yrs • Fluorometer KV-ANT-7 (for oil), USSR, Old • Spectrophotometer MERCK, Spectroqual NOVA 60, Old • 2 Spectrophotometers, LOMO SF-46 (no longer used), USSR, 1975 • Spectrophotometer MERCK SQ 118, +/- 5 years • Spectrophotometer SF 27, USSR, 1975 • Spectrophotometer RF-1501, Shimadzu, Japan, New from JICA • Photometer KFK-3, USSR, Old - +/- 30 yrs • Flame photometer Spekol ZV, Karl

	<p>Zeiss, former East Germany, Old - +/- 30 yrs</p> <ul style="list-style-type: none"> • Atomic Absorption Spectrophotometer AAS-3, USSR, Old - +/- 30 yrs, Spare parts no longer available • Gas liquid chromatograph, USSR, Old +/- 20 yrs • Database computer AGC 286, Old +/- 10 yrs • General computer ASI + Epson printer, Old • IBM desktop computer, Old
Are there sufficient consumables for the analytical programmes to be sustainable? Are there refrigerators, incubators, ovens etc., is there access to pure water (distilled/deionised), pure reagents, standards, gases, spare parts for equipment, is there sufficient glassware (plastic) such as beakers, flasks, pipettes? Are there certificates for reagents and standards?	<p>(A) Consumables are generally expensive, but available. There is a need for back-up supply for more safe operation.</p> <p>(B) In general no problem with consumables supply.</p>
Are consumables available locally (nationally) or must they be imported, are there import regulations and taxes?	<p>(A). The consumables are received through a national import-expert trading company. . Budget is tight, but available to purchase them.</p> <p>(B) The consumables are received through a national import-expert trading company.</p>
Are there facilities for the protection of employees? (Suction facilities, gas masks, showers)	<p>(A) Gloves, glasses, special shoes and laboratory coats are available,.. No other protection facilities are used in the lab.</p> <p>(B) Gloves, glasses, special shoes and laboratory coats are available.</p>
How are reagents, etc. disposed? (Neutralization of waste water, collection of chloride and non-chloride substances)	<p>(A) This issue has not been solved yet. No national service provider in this field.</p> <p>(B) This issue has not been solved yet. No national service provider in this field.</p>
Make any other comments on the state of the laboratory, its equipment and consumables that arise during the mission.	-
Quality control and data management needs:	
QUESTION	RESPONSES
Is the laboratory accredited under national/international protocols?	<p>(A) The lab is accredited by national standards.</p> <p>(B) The lab is accredited by national standards.</p>
Are there standard operating procedures? Are they documented?	<p>(A) Yes.</p> <p>(B) Yes.</p>
How often are certain parameters analysed? And is the equipment calibrated accordingly?	(A) Every three months 30 samples for 17 determinands. Calibration before the

(How often?)	<p>measurements.</p> <p>(B) Monthly. Calibration is done also monthly. In special cases calibration is done before every measurement.</p>
Does the lab take part in round-robin test?	<p>(A) No intercalibration.</p> <p>(B) The lab participates in intercalibration procedures in every year (WMO).</p>
Are quality control charts and records kept so bias and error can be detected early?	<p>(A) Yes.</p> <p>(B) Yes. Even when analytical measurement campaign starts every month control measurements are carried out to reduce errors.</p>
Does staff keep laboratory diaries?	<p>(A) Yes</p> <p>(B) Yes.</p>
Are staffs trained on quality control procedures?	<p>(A) Yes. It is done once a year.</p> <p>(B) Yes. Some staff members got training in Japan recently.</p>
Are data screened and checked before being reported? Is this done electronically?	<p>(A) Yes. The head of the laboratory checks the data.</p> <p>(B) Yes. The head of the laboratory checks the measured values.</p>
What data management system is in place?	<p>(A) The paper-based records are stored in the laboratory. The laboratory staff make electronic recording of the analytical results and send them to the SCNP.</p> <p>(B) The laboratory uses a special programme for data recording. Data are stored in table format electronically.</p>
Are there back-ups and security to protect the data?	<p>(A) There are only two computers in the laboratory. Data are backed-up</p> <p>(B) Yes. Back-ups are stored on diskettes.</p>
Do the public have access to the data?	<p>(A) Data produced by the laboratory are available at the SCNP. Information could be received only from the SCNP (Information centre).</p> <p>(B) . Data produced by the laboratory are available at the SCNP. Information could be received only from the SCNP (Information centre).</p>
What happens to the data after it is generated – is it used for water management purposes? If so – how?	<p>(A) Data produced by this laboratory go to the Information Centre of the SCNP.</p> <p>(B) Data produced by this laboratory go to the Information Centre of the SCNP.</p>

Make any other comments on quality control, staff, data management and data handling that arise during the mission.	-
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<i>Institutional needs:</i>	
QUESTION	RESPONSES
How many staffs are employed in the laboratory? Graduates/support-administrative.	(A) 6 staff are working at the Laboratory. All of them have university degree. (B) 5 staff members – all have university degree - are working at the lab. Sampling team belongs to a different unit within the Centre of Hydrometeorological Service.
Does the laboratory have a sufficient and sustainable annual budget from regional or central sources?	(A) For basic activities, yes. 70% comes from state budget, 30% from contracts. (B) The budget received from central budget tightly covers the costs of regular monitoring activities.
Can the laboratory generate income by entering the market (e.g. is the government encouraging self-monitoring by dischargers)?	(A) Yes. It is estimated that the laboratory receives an additional 30% from the market. (B) Yes. The laboratory generates about 5-15% additional income yearly, that can be used for staff salary, and additional investments as well.
Are there private laboratories in competition?	(A) There are no laboratories in competition (B) No private competitor in the market.
What is the monthly throughput of samples?	(A) About 30 water samples per month, which are analysed for about 17-25 determinands. The laboratory has a capacity for 100 samples per month. (B) 32 samples per month that are analysed for about 40 determinands.
Make any other comments on the sustainability of the laboratory that arise during the mission.	-
Needs Assessment Report compiled by:	Tim Lack and János Fehér on 26 th May 2007.