prepared for:

Rijkswaterstaat RIZA

Integrated Water Management for the Ladoga-Neva-Gulf water system and the City of St. Petersburg

report of activities by the Russian-Netherlands working unit

T 1253 - Auteurs:
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November 1994

T1253

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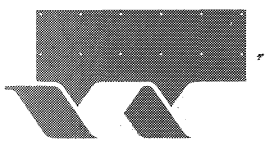

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1 Introduction and objectives

St. Petersburg is situated at the mouth of the Neva, where the river enters into the Gulf of Finland. Similar to other coastal areas in the world, the ecological values and related resources have been negatively influenced due to ongoing urbanization, industrialization and infrastructural developments. In addition, large parts of the city are prone to periodic flooding. Since its foundation in 1703 the city has suffered from flooding more than 300 times. To protect the city, its inhabitants, the cultural and economic interests, in 1979 a start was made with the construction of a 25 km storm surge barrier, connecting the shores of the Neva Bay via Kotlin Island. Also a system for waste water collection and treatment was built to reduce the pollution input from the city into the Neva and Gulf of Finland.
The current status of these works is that neither projects have yet been completed, and therefore no integrated solution has been reached to combat simultaneously the risks of environmental degradation and flooding.

Whilst the construction of the storm surge barrier was underway, the growing public awareness and environmental concern also lead to questions regarding the rational design and construction of the dam and its proposed operation in view of the environmental aspects of the project.

On the basis of the findings of an International Commission, steps were taken towards an integrated approach in which completion of the dam, mitigating options, improved waste water treatment, active ecological management and the development of modes for the future operation of the dam and sluices, are key-factors in the framework of a regional plan for integrated water management. Central to this phase in the policy formulation is the Government's aim to identify a new concept for the management of the Ladoga-Neva-Gulf water system, in which the dam is an integrated element for active ecological management, aiming at regulation of the water regime as well as at improving the quality of the environment. To this end a joint Russian-Dutch working group has been established.

In September 1992 a Russian delegation was invited to the Netherlands by the Ministry of Public Works, Transport and Water Management in the framework of the Memorandum of Understanding on Environmental Cooperation between The Russian Federation and The Netherlands.

A protocol was signed, agreeing under the working programme of the MoU:

a. to adopt an integral regional approach to achieve sustainable use and development of the Ladoga-Neva-Gulf water system, and to harmonize desired functions in relation to the carrying capacity of the water system
b. to set up a working unit that shall identify conditions and develop a methodology and outline terms of reference for a policy analysis for future developments.

The aim of the present MoU activities is to elaborate the desired approach for a water system analysis and policy analysis and to set priorities for water management of the Ladoga-Neva-Gulf water system. In the follow-up phase, short term immediate investments projects should be formulated on straight forward considerations (e.g. drastic reduction or elimination of emissions). Longer term planning (optimization) processes will ask for a more complicated analysis of economic and environmental costs and benefits.

In July 1993, the Dutch Ministry for Transport, Public Works and Water Management decided to provide the financial means for the first phase of the work, envisaged in the protocol, i.e. the activities of the working unit.

By contract RI-1366 Rijkswaterstaat commissioned DELFT HYDRAULICS to plan and carry out activities towards the first phase in 1994.

To follow the protocol of September 1992, the objective of the project has been to identify conditions, and to develop a methodology and outline terms of reference (TOR) for a policy analysis for future developments pertaining to:

a. the ecological, environmental and safety problems in the Ladoga-Neva-Gulf water system;
b. the improvement of the waste water treatment, the hydrology of the system and for identifying a new concept for the management of the Ladoga-Neva-Gulf water system, in which the dam is an integrated element for active ecological management, aiming at regulation of the water regime as well as at improving the quality of the environment;

In chapter 2 of this report the set-up of the work is elaborated. The results sofar are presented chapter 3 and in a number of the annexes. Conclusions and proposed follow-up activities are given in chapter 4.

2 Set-up

The project was organized in a three-step approach:

1. to organize an intensive workshop in St.Petersburg for exchange of views and information.
2. drafting an outline proposal of the activities for the water system analysis and the policy/management analysis
3. presentation of the proposal in St. Petersburg and planning of the follow-up activities

After consultation with the St.Petersburg authorities, a Netherlands' delegation was invited by Deputy Mayor D. Sergeev to visit St.Petersburg for an intensive workshop from March 26 until April 6.

The members from the Netherlands' delegation have been:

ir. J.R. Hoogland	-	RIJKSWATERSTAAT
ir. P.G. Kruitwagen	-	RIJKSWATERSTAAT
dr. G.S. Rodenhuis	-	DELFT HYDRAULICS
ir. J.A. van Pagee	-	DELFT HYDRAULICS
drs. P.C.G. Glas	-	DELFT HYDRAULICS

The list of members from the Russian side is included in Annex B (page 2).

3 Report on activities in 1994

The activities of the joint Russian-Dutch working group in 1994 consisted of a) preparation of the workshop, b) the workshop including drafting of a proposal for an integrated water management (IWM) project, c) presentation of the proposal to the EBRD in April, d) presentation of the proposals at the European Market for Infrastructural Projects EMIP-94 in Rotterdam (22-24 June), e) definition of follow-up activities.

3.1 preparation of the workshop

The preparation of the workshop was carried out in close communication between the St.Petersburg Mayor's Office, Mr. D. Sergeev, Morzaschita and DELFT HYDRAULICS. This resulted in the programme included in Annex A, which was presented by the Russian side to the Netherlands' delegation on arrival. Most of the items where carried out according to plan. To allow for the preparation of a protocol of the workshop and an outline proposal for the IWM project, not all Netherlands' delegation members participated in all items of the agenda.

The Netherlands' delegation was hosted by Morzaschita, who provided hotel arrangements, local transportation and organized an accompanying cultural programme. Just prior to the workshop, the task of Mr. Sergeev was taken over by First Deputy Mayor V.A. Jakovlev, head of the committee on economical development of St.Petersburg. Mr. Jakovlev accepted the co-chair of the Russian-Netherlands IWM working group.

3.2 the workshop

The aim of the workshop was:

1. to establish the state of the protection against flooding of St.Petersburg
2. to establish the state with respect to IWM in St.Petersburg: a) developments in the infrastructure, b) use of computer models, c) objectives of IWM
3. to define necessary means for a joint IWM project: a) data availability, b) institutional aspects, c) analytical tools and computer models
4. to prepare a presentation for the EBRD annual board meeting in April 1994 comprising: a) identification of objectives and options for water management in the Ladoga-Neva-Gulf watersystem, b) a draft workplan (TOR) for the introduction of IWM in the region of St.Petersburg

Internal RIJKSWATERSTAAT reports (in Dutch) on the workshop are included in Annexes B and C. The protocol of the meetings was signed by Mr.Hoogland and Deputy Mayor Mr.Jakovlev on April 2. It is included in Annex D.

the state of the protection against flooding of St.Petersburg

From the discussions with many specialists, and from the tour of the Barrier, it became very clear that there is an urgent need to complete the construction of the barrier according to plan. Constructions are still being carried out, but due to budgetary constraints at a very low pace. The state of protection of the building sites, especially the coffer dam at the construction of the Morskoj Canal gates, is very poor. This fact may lead to serious damage in case of a major storm and high water situation in the Gulf of Finland. It was understood that the Russian Government had decided in principle to complete the Barrier using Russian Federal funding. This conclusion was welcomed by the Netherlands' delegation. A definite decision however is still awaited.
In fact, during the month of October 4, 1994 high water situation did occur resulting in inundations. These have been less severe than the 1986 situation, but nevertheless damage did occur.

October 2, 1994 inundation number 284
the surface level was up to 137 cm in Krohnstadt and 219 cm in St.Petersburg (1986: 2.60 cm). A special commission determined the damage from this flood to be 19 milliard rubles (6.1 million US$), including amongst others damage to a bridge, one ship crashing and inundation of underground lines of communication. The damage to the Barrier was estimated at 361,000 US$, mainly consisting of washing away of building materials and breaking down of electric equipment. The volume of eroded material near the ship gates was 6,000 m^3 near ship gate C1, 650 m^3 near gate C2, 8,000 m^3 from the dam at the north gate, and 3,000 m^3 from the dam of the south gate.

October 4, 1994 inundation number 285
the surface level was again up to 137 cm in Krohnstadt and 184 cm in St.Petersburg. Damage was limited.

October 12, 1994 inundation number 286
the surface level was up 183 cm in Krohnstadt and 228 cm in St.Petersburg. The commission marked out that again building material eroded on this occasion.

October 12, 1994 inundation number 287
the surface level in St.Petersburg was up 163 cm. Damage was limited.

During the workshop some tentative calculations were made of the possible damage to the Barrier in case of a serious flood situation. For the Morskoj Canal is was estimated that between 600,000 and 1,600,000 m^3 may be eroded from the unprotected coffer dam, and slide into the shipping channel. Clearing this from the channel will take approximately 6 month's to complete and cost between 3½-9½ million US$, not counting the loss of income to the Port of St.Petersburg due to downtime of navigation.

In september 1994 the EBRD issued a public invitation for consultants to express interest in a technical and financial feasibility study of the St.Petersburg storm surge barrier. This study is to be executed in 12 months after december 1994. The situation to date (December 2, 1994) is that five consortia have been selected by the EBRD to submit proposals. DELFT HYDRAULICS is member of one of the selected consortia.

the state with respect to integrated water management

In 1992 a joint Russian-Dutch protocol was signed in which the Russian Federal and Regional authorities stated to adopt the principles of Integrated Water Management for the future policy development for the Ladoga-Neva-Gulf (LNG) water system. The main reasons and objectives for the introduction of the principles and methodology of IWM for the LNG-watersystem are:

- achieving the sustainable use and development of the LNG natural resources
- harmonizing desired functions in relation to the carrying capacity of the water system and moreover,
- formulation of a strategy for environmental and ecological developments in the St.Petersburg region to be imbedded in social and economic development plans and environmental action and investment plans.

Up till the date of the workshop, no explicit steps had been taken in St.Petersburg to make these objectives operational. As was concluded before, during the execution of the tasks by the International Commission in 1991, the state of the sewerage system and municipal waste water treatment facilities is such that urgent repairs and upgrading are called for. The situation with respect to inputs of micro pollutants and heavy metals, especially from the (former?) military facilities in the centre of town remains unclear.

During the presentations at Morzaschita a computer model system was presented by Mr. K.A. Klevanny of the Morzaschita Ecological Division. A similar system was prepared for preliminary analysis and discussion by DELFT HYDRAULICS. In annex H some results of the hydrodynamic and water quality simulations are presented. In annex I hard copies are included of the menu's of the pilot model to simulate mass transport and water quality in the Neva Bay. The model can be run on a standard MS-DOS 486 PC. Floppy disks with the model can be provided by Delft Hydraulics on request. The geographical scope is limited to the Neva Gulf and adjacent part of the Gulf of Finland. Lake Ladoga and the Neva river are presently not included.

In order to provide a full IWM decision support system for evaluation *ex ante* of economic and environmental management options, much attention should be paid to the establishment of a comprehensive database system. This database should comprise amongst others economic facts and figures, pollution loads, environmental standards and objectives. To our knowledge a quantitative elaboration of IWM objectives in the St.Petersburg Region has not yet been prepared.

A further elaboration on the proposed database and modelling system is contained in Annex E.

necessary means for a joint IWM project

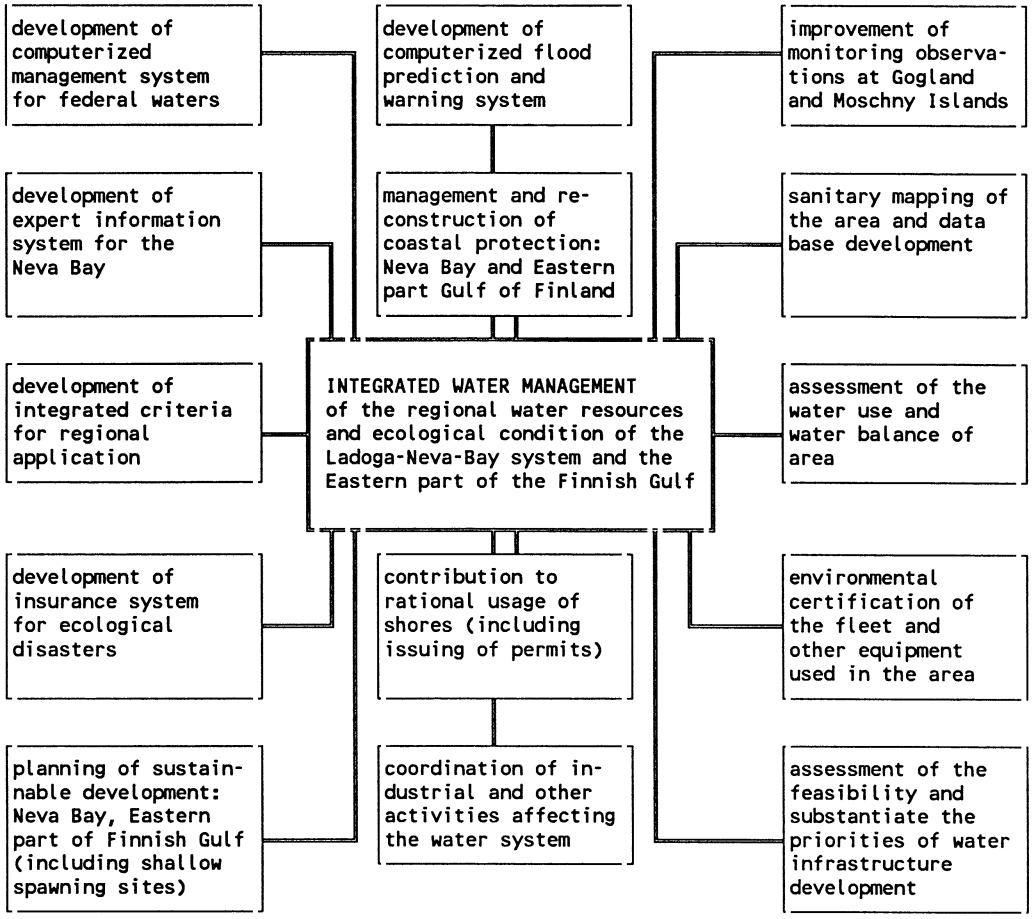
The most important condition for the establishment of IWM in St.Petersburg is the institutional arrangement. Presently different national and regional administrative levels, institutes en departments of the Mayor' Office are entrusted with responsibilities connected to the physical planning and environmental management of the LNG system. To the Netherlands' delegation it is still not completely clear how the division of competence is, and how the different entities work together in concrete decision making processes. Therefore, it was welcomed that during the workshop a decision was made by the Mayor to set up a unit in St.Petersburg that will be responsible for the planning and implementation of IWM of the LNG area.

The operational and planning tasks of the unit are connected to the following fields of operation:

1. design and (re)construction of the flood barrier, the orbital highway, harbours, and other (hydro)technological objects in the LNG system, within the administrative borders of St.Petersburg;
2. protection of the coast of Neva Bay and the Eastern part of the Finnish Gulf against damages, their reconstruction and transformation into profitable recreation zones;
3. the re-evaluation of coastal dumping of sediments;
4. planning and implementation of sustainable development projects in the Neva Bay (including shallow water spawning sites);
5. develop and implement an infrastructure for maintenance, research and development in the LNG system within the administrative borders of St.Petersburg;
6. the objects of the City Government on the Black Sea coast of the Crimea;
7. coordination of economic activities affected by or dependant on the LNG watersystem;
8. operation of the flood barrier and other relevant hydrotechnical and geodynamical objects.

The unit will in effect be responsible for all environmental impact assessment and optimal planning of proposed economic activities in view of possible adverse effects on the environmental status of the surface waters within the administrative borders of St.Petersburg.

The Russian side presented an organogram for the activities of the IWM Unit.



It was expected that Morzaschita would be entrusted with this task. Until present it is not clear whether the decision to set up the IWM Unit has become effective.

3.3 preparation for the EBRD annual board meeting

From 16 to 19 April, 1994, the annual board meeting of the EBRD was held in Tavrichesky Palace, St.Petersburg. From the Russian side, during the preparation of the workshop, it was expressed that they would like to have support from the Netherlands' side in the preparation of presentations to the EBRD. To this end, already during the workshop an outline of an IWM project for the LNG system was prepared by a small working group from the Russian and Netherlands' delegation. This outline proposal is contained in Annex E. On the basis of this proposal and additional information provided by Morzaschita during the week 11-15 April a volume of english and russian overhead sheets was prepared by DELFT HYDRAULICS. Two copies of this material were delivered to Mr. Usanov of Morzaschita by the kind assistance of Mr.Jan Leenes (Hollandse Beton Groep - Rijswijk) who attended the EBRD meeting. Hard copies of the sheets are included in Annex F.

The IWM project was included in the volume of proposals that where presented to the EBRD by the Russian Federation.

3.4 European Market for Infrastructural Projects EMIP-94 in Rotterdam

Through mediation of the Netherlands' Consulate General in St.Petersburg, different officials in St.Petersburg received an invitation to give a presentation at the European Market for Infrastructural Projects EMIP-94 in Rotterdam (22-24 June). Mr.Sergey Victorov, scientific secretary to the Russian-Netherlands' working group, presented briefs on three projects: St.Petersburg Ports, St.Petersburg Orbital Highway and the IWM project. These are all included in the Russian list of proposed projects to the EBRD.

Recently it was quoted in the Russian press that the St.Petersburg authorities are ready to approve a federal project for the construction of new sea ports on the Gulf of Finland. The locations of the sea ports to be constructed and their capacities are quoted to be as follows: Primorsk - up to 45 million tons of crude oil, oil products, liquid chemicals per year. Ust-Luga - up to 35 million tons of general, dry and container cargo cargoes per year. The Batareynaya Bay - up to 5 million tons of general and container cargoes per year.

For the road transport connection of St.Petersburg to the North and to Moscow the EBRD has issued, in september, a call for expressions of interest in a pre-feasibility study of the Moscow-St.Petersburg-Vyborg corridor. The optimization of transport capacity around St.Petersburg is vitally connected to the completion of the Barrier.

4 Conclusions and follow-up activities

After the EBRD meeting in April, the bank has taken initiatives on a number of issues connected to the water and safety problems of St.Petersburg.

1. An invitation for expression of interest for a technical and financial feasibility study of the St.Petersburg storm surge barrier. The main tasks of this 12 month contract will be: a) carry out a survey of the partially constructed barrier and technical review of the current design, b) identify completion costs, c) carry out a full financial and economic analysis together with likely options for cost recovery and appropriate institutional structure.

2. An invitation to tender for a first phase of support to the upgrading of water supply and sewerage systems in St.Petersburg to international standards.

In October Mr.Timo Makela of the EBRD visited St.Petersburg and held extensive discussions on the topic of IWM with Mr.Frolov of Lenkomecologia. Based on these discussions Mr. Graham Smith from the EBRD wrote to Mr.Usanov of Morzaschita expressing the Bank's *"strong support to the programme which will enable regional authorities to manage water resources better in future"*. Notwithstanding this support, Mr.Smith recommends to find financing for the IWM project through bilateral donors, i.e. from the Netherlands. The letter from Mr.Smith is included in Annex G.

From these developments we may conclude that the EBRD has taken up the issues of water management and safety in the St.Petersburg region. This is quite a change from the position of the bank held in february 1993, when they declined a suggestion from the Netherlands' Minister of Foreign Economic Relationships, Ms. Yvonne van Rooij, to use trustfund financing for an earlier version of the IWM project proposal.

In the mean time, from the Netherlands' side there have been taken initiatives to support the City of St.Petersburg in the restoration and protection of its cultural heritage, amongst others of the Hermitage building and collection. In the past the Hermitage has suffered from flood damage, and also the roof and sewerage system are in a bad state of repair. We are informed that also UNESCO is engaged in a support programme for the Hermitage. The Netherlands' Ministry of Transport, Public Works and water Management and the Ministry of Education, Culture and Science in this respect have decided to coordinate their activities in the coming years.

Taking all recent developments into account, we may conclude that a number of activities related to the water infrastructure and water management are taken place, partly to be funded through the EBRD, partly through Russian federal funds. However, the integration of activities in an IWM approach has not been accepted for financing. Graphical the interconnections of ongoing initiatives may illustrated by Figure 1.

On this basis, and bearing in mind the present support on the principle of the IWM project by the EBRD, DELFT HYDRAULICS is committed to communicate with the Russian side, and take appropriate steps to secure a trustfund donation from the Netherlands' Government for (partial) financing of the IWM project. We have good hope that this process can be carried out during the first quarter of 1995.

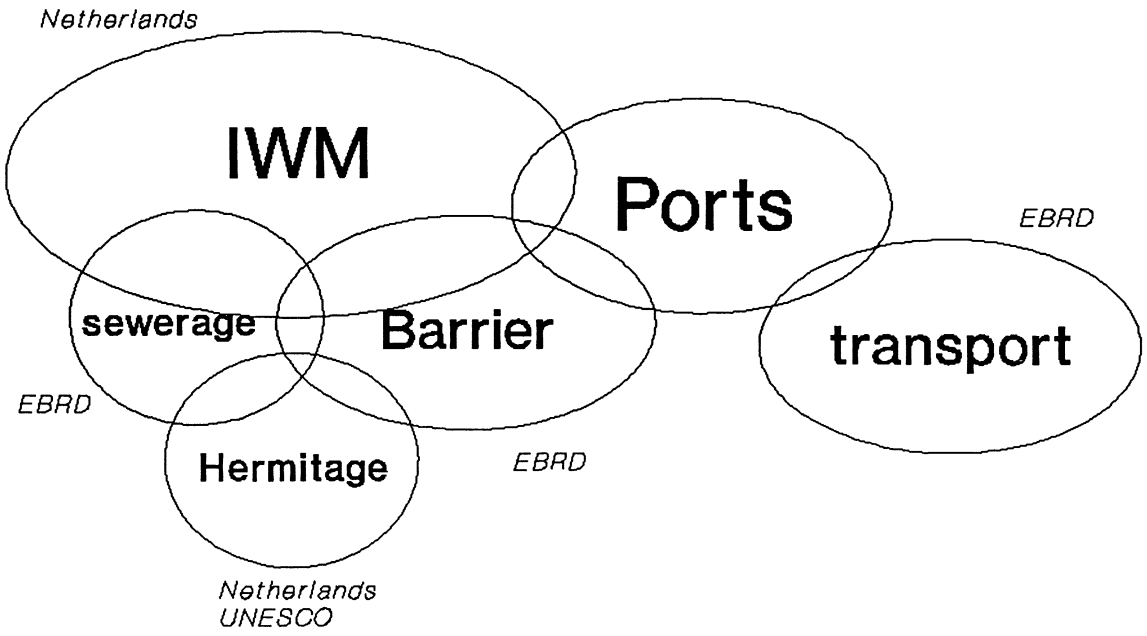


Figure 1 bilateral and multilateral contributions connected to the water sector

Annex A Programme of the workshop

Programme of the workshop

Programme for the visit of the Netherlands' delegation, headed by the Director of Water Management, Mr.J.R.Hoogland, to St.Petersburg.

March 26 - April 2, 1994

Saturday, March 26

15.05	arrival of Mr. J.A. van Pagee and Mr. P. Kruitwagen
19.50	arrival of Mr. P.C.G. Glas

Sunday, March 27

15.05	Arrival of Mr.& Mrs.Hoogland and Dr.Gaele Rodenhuis
19.00	dinner

Monday, March 28

8.00-9.00	breakfast and arrival at Morzachshita Administration Mayor's Office St.Petersburg
9.00-11.00	discussion on the programme. Selection of items to be discussed: - at the Mayor's Office in connection with the April Meeting of the EBRD - at the institutions - possible content of the concluding document
11.00-11.45	transfer and arrival at the Barrier
11.45-13.45	introduction and tour over the Barrier
14.00-15.00	dinner hosted by 'Mangazeya' Ltd. in the House of Officers, Krohnstadt
15.00-17.00	cultural programme, visit of Krohnstadt
after 17.00	return to St.Petersburg, dinner hosted by 'Mangazeya' in restaurant Fortressia.

Tuesday, March 29

8.00-9.00	breakfast and arrival at Morzachshita
9.00-13.00	meeting with the representatives of St.Petersburg Administration, scientists and specialists
14.00-15.00	visit to the Mayor's office, dinner

15.00-18.00	discussion on the project, meeting with deputy mayor Jakovlev and representatives from the financial and economic departments
19.00	evening reception hosted by Mr. Jakovlev in restaurant St.Petersburg

Wednesday, March 30

8.00-9.00	breakfast and transfer to VNIIG
9.30-12.30	view of the laboratories and discussion with the leading specialists of the institute
13.00-14.30	dinner hosted by VNIIG
14.30-15.00	transfer to St.Petersburg Technical University
15.00-18.00	view of the Hydrotechnical Faculty, discussion with faculty specialists of the department of Water Management
19.30	evening reception hosted by Consul General Wildeboer in restaurant Senate

Thursday, March 31

8.00-9.05	breakfast and transfer to the Laboratory of the Centre of Ecological Safety of St.Petersburg of the scientific centre of the Russian Academy of Science
9.15-11.30	introduction to the modelling principles adopted in the laboratory, discussion with specialists
11.30-12.00	transfer to 'Lenkomecologia'
12.00-12.45	discussion with the director of Lenkomecologia Dr. A.K. Frolov
12.45-14.00	dinner hosted by Lenkomecologia
14.00-14.30	transfer to the institute of Limnology of the Russian Academy of Science
14.30-17.00	meeting with the director of the Institute Prof. V.A.Rumiantsev and discussion on the programme Finland Bay '96
17.15-18.30	dinner hosted by the institute of Limnology
19.00	cultural programme: visit to Mariinsky Theatre. A.Glazunov ballet 'Raymonda'

Friday, April 1

8.00-9.00	breakfast
9.00-10.00	transfer to Pushkin Town (Tsarskoe Selo)
10.00-13.00	view of Ekatereninski Palace, Litsei. Puskin Museum
13.00-14.00	dinner
14.00-16.30	view of Pavloski Palace and Park
16.30-17.30	discussion withe General Director of 'AvtoDorStroiTransServis' Mr. Dosenko V.A., on the problem of building of roads in the St.Petersburg region
	diner hosted by Mr. Dosenko

Saturday, April 2

8.00-9.00	breakfast and transfer to Morzachshita
9.00-11.00	concluding discussion and signing of the concluding document
11.00-12.00	press conference
12.30-14.00	diner
	departure

Annex B report of Mr. Peter Kruitwagen on the sit evisit March 26 - April 2 to St. Petersburg (in Dutch)

VERSLAG

Lelystad, 13 april 1994

betreft : **workshop St.Petersburg 26/3/94 - 2/4/94**
van : **Peter Kruitwagen**
aan : **Frans v.d. Ven**
afschrift : **Aad Dollee (WSH)**
Frans Claessen (WSG)
Hans van Pagee (Waterloopkundig Laboratorium)

inleiding
De workshop in St.Petersburg is gepland in het kader van de uitvoering van het MoU (Memorandum of Understanding) for Environmental Cooperation, en als vervolg op het Protocol van het bezoek van de delegatie uit St.Petersburg aan Nederland op 6-11 september 1992.

In dit protocol (sept. 1992) is vastgelegd dat er een "working unit" opgezet zou worden die onder andere een "terms of reference" zou opstellen voor een beleidsanalyse integraal waterbeheer voor het Ladoga-Neva-Finse Golf systeem.

De "working unit" had als voorzitters D.V. Sergeyev (deputy mayor St.Petersburg) en J.R. Hoogland (directeur Water, RWS). Contactadressen waren "Morzaschita" aan de russische kant en "Waterloopkundig Laboratorium" aan de nederlandse kant.

De workshop was verder onderdeel van een project van het RIZA, uitbesteed aan het WL met een inhoudelijke bijdrage vanuit het RIZA, betreffende:
1. het houden van een workshop om de mogelijkheden van integraal waterbeheer voor het Ladoga-Neva-Golf systeem en de mogelijkheden voor implementatie na te gaan;
2. het opstellen van concept-Terms of Reference voor implementatie van de instrumenten en de administratieve organisatie voor een effectief integraal waterbeheer in de regio St.Petersburg;
3. Presentatie van de resultaten van de workshop en de concept-Terms of Reference voor de implementatie-fase aan de Gemeenteraad van St.Petersburg.

doel
Het van nederlandse zijde gestelde doel van de workshop was "het verkrijgen van voldoende inzicht in aanwezige organisatiestructuur, beschikbare gegevens en modellen opdat een werkplan voor de invoering van integraal waterbeheer in de regio van St.Petersburg opgesteld kan worden".

Na overleg tussen het WL (H. van Pagee en P. Glas) en Rijkswaterstaat (H.J. de Haan, F. v.d. Ven en P. Kruitwagen) zijn als punten van bespreking voor de workshop aan de russen voorgesteld:
1. Stand van zaken bescherming tegen hoogwater in St.Petersburg
   - ontwikkelingen rond voltooiing van de stormvloedkering

2. Stand van zaken m.b.t. integraal water beheer in St.Petersburg
   - ontwikkelingen in de structuur van het waterbeheer
   - gebruik van computer-modellen
   - doelstellingen van integraal waterbeheer
3. Benodigdheden voor het gezamenlijk project "integraal waterbeheer"
   - noodzakelijke gegevens versus de beschikbare gegevens
   - organisatorische inpassing
   - noodzakelijke en beschikbare computermodellen en analytische instrumenten
4. Voorbereiding voor de EBRD jaarvergadering
   - identificatie van beleidsdoelstellingen en opties voor waterbeheer in het Ladoga-Neva-Golf watersysteem
   - opstellen van concept-werkplan ter introductie van integraal waterbeheer in de regio van St.Petersburg.

inzet

Van Nederlandse zijde bestond de delegatie die St.Petersburg bezocht uit:

ir. J.R. Hoogland,	Rijkswaterstaat - hoofddirectie
ir. P.G. Kruitwagen,	Rijkswaterstaat - RIZA
dr. G.S. Rodenhuis,	Waterloopkundig Laboratorium
ir. J.A. van Pagee,	Waterloopkundig Laboratorium
drs. P.C.G. Glas,	Waterloopkundig Laboratorium

Van Russische zijde waren bij de workshop betrokken:

A.S. Baev,	the Head of Environmental Department Mayor's Office of St.Petersburg
I.I. Bogolepov,	Vice-President of Scientific & Engineering Society Deputy of academician Glebov
V.K. Donchenko,	the Director of the Center of Ecological Safety Russian Academy of Sciences
I.K. Drugov,	the General Director of "Mangazeja" Ltd.
M.P. Fedorov,	Dean of Hydrotechnical Department of Technical University
A.K. Frolov,	the Head of "Lencomecology" Committee
A.N. Glotov,	Deputy Head of "Morzaschita"
Y.A. Grigoriev,	the Director of HydroProject Institute
A.L. Goldin,	-
D.A. Ivashintsev,	the Director of Vedeneyev Hydrotechnical Institute (VNIIG)
V.A. Jakovlev,	the First Deputy Mayor Head of the Committee on Economical Development of St.Petersburg
K.A. Klevanny,	"Morzaschita" - Ecological Division
G.K. Komarov,	the General Director of "Gydrostroi" (successor of Yu.K. Sevenard)
N.G. Krouglov,	"Morzaschita" - Head of Design Department
S.N. Kuraev,	Chief Engineer of the barrier project HydroProject Institute
T.N. Kuznetsova,	"Morzaschita" - Chief Hydrotechnic
V.B. Lesogorov,	"Morzaschita" - Deputy Head
O.N. Makarov,	Chief of Laboratory of the Center of Ecological Safety

	Russian Academy of Sciences
G.V. Matveyev,	"Morzaschita" - Ecological Division
R.R. Michailenko,	"Morzaschita" - Chief of Ecological Division
B.P. Ousanov,	the Head of "Morzaschita"
S.A. Pichugin,	"Morzaschita" - Chief of Technology Division
E.M. Pimenov,	Chief of Environmental Division of Committee on Economical Development of St.Petersburg
V.A. Rochkov,	the Director of the State Oceanographical Institute (St.Petersburg Branch)
G.A. Satronov,	Assistant of the Head of "Morzaschita"
V.I. Sokolov,	the Head of Sea Inspectors of "Minecologia"
Y.N. Smirnov,	the Head of the Department of Mayor Engineering Constructions member of the Jury of the EBRD Projects
Y.A. Suntsov,	photographer
L.I. Tsvetkova,	Professor St.Petersburg Engineering Academy
S.V. Victorov,	the State Oceanographical Institute
I.A. Yushanov,	Deputy Head of Committee on Economical Development of St.Petersburg

uitwerking
De dag voor vertrek bleek dat D.V. Sergeyev, mede-voorzitter van de "working unit", vervangen was door V.A. Jakovlev. Volgens onze informatie is het departement waar Sergeyev hoofd van was in zijn totaliteit opgeheven. De taken van dit departement zijn overgenomen door het departement van Jakovlev. In verband hiermee is het oorspronkelijk plan enigszins gewijzigd. Het informeren van Jakovlev, en hem bij het project "integraal waterbeheer" betrekken heeft nu de hoogste prioriteit gekregen. Daarnaast was het verkrijgen van de steun van Jakovlev, en indirect van burgemeester Sobchak, voor de presentatie van het project bij de EBRD een hoge prioriteit.

Bij aankomst bleek er van russische kant al een uitgewerkt weekprogramma te liggen, vooral gevuld met bezoeken aan diverse instanties en discussies met betrokkenen. Dit programma liet erg weinig ruimte voor het opstellen van teksten. Gedurende de week is dan ook regelmatig van het voorgestelde programma afgeweken. In het navolgende is het feitelijk uitgevoerde programma weergegeven.

zondag, 27 maart

17.30	Voorbespreking van het uitgereikte programma met de Nederlandse delegatie
19.00	Diner en informele bespreking van het programma met B.Ousanov en S.Victorov

maandag, 28 maart
ochtend
1. Bespreking van het programma en voorbereiding van
   - bezoek aan Jakovlev
   - document tbv EBRD-vergadering
2. Bezichtiging van de stormvloedkering

middag
Bezoek aan Krohnstadt

avond
Voorbereiding van lezingen te houden op dinsdag

dinsdag, 29 maart
ochtend
1. Lezingen van Russische deelnemers
   a. integraal waterbeheer in St.Petersburg
   b. modelontwikkeling
   c. gebruik van de stormvloedkering bij de sturing van de waterkwaliteit
2. Lezingen van Nederlandse deelnemers:
   a. integraal waterbeheer in Nederland
   b. bevindingen van de internationale commissie ten aanzien van de stormvloedkering
   c. economische aspecten van waterbeheer in relatie tot de presentatie voor de EBRD
3. Discussie over de projectpresentatie voor de EBRD

middag
1. Ontvangst door V.A. Jakovlev in het "Stadhuis"
2. Discussie met medewerkers van V.A. Jakovlev over de presentatie van het project richting EBRD

avond
Voorbereiding van het programma van woensdag.

woensdag, 30 maart
ochtend

1. bezoek aan VNIIG	[Hoogland, Rodenhuis]
2. uitwerken economische component van projectplan integraal waterbeheer	[Glas]
3. invulling technische aspecten projectplan integraal waterbeheer	[v.Pagee, Kruitwagen]

middag

1. bezoek aan St.Petersburg Technical University	[Rodenhuis, Glas]
2. bezoek aan Laboratory of the Centre of Ecological Safety of St.Petersburg, Scientific Centre of Russian Academy of Science	[v.Pagee]
3. uitwerken operationeel beheer	[Kruitwagen]

avond
ontvangst door Consul-Generaal en Consul tijdens diner

donderdag, 31 maart
ochtend

1. bespreking van concept-brief aan Sobchak	
2. invulling projectplan integraal waterbeheer	[v.Pagee, Glas]
3. bezoek aan Lenkomecologia	[Hoogland, Rodenhuis, Kruitwagen]

middag

1. invulling projectplan integraal waterbeheer	[Glas]
2. bezoek aan institute of Limnology	[Hoogland, Rodenhuis, v.Pagee, Kruitwagen]

avond
bezoek aan Mariinsky Theater

vrijdag, 1 april
ochtend

1. bespreking concept-tekst Protocol	
2. overleg met dhr. Dosenko van "AvtoDorStroiTransServis	[Hoogland, Rodenhuis]
3. invulling projectplan integraal waterbeheer	[v.Pagee, Glas, Kruitwagen]

middag

1. bezoek Pushkin Museum en Pavlov Paleis	[Hoogland, Rodenhuis, Glas]
2. uitwerken tekst projectplan en protocol	[v.Pagee, Kruitwagen]

zaterdag
ochtend
1. slotbijeenkomst met ondertekening van het protocol
2. persconferentie

resultaat
Het resultaat van de workshop in St.Petersburg is als volgt samen te vatten:
1. V.A. Jakovlev accepteert zijn rol als mede-voorzitter van de "working unit". Bovendien is hij nu op de hoogte van de stand van zaken met betrekking tot het project Integraal Waterbeheer, en ziet hij het belang hiervan in.
2. Burgemeester Sobchak heeft toegezegd dat hij het project Integraal Waterbeheer zal presenteren op de EBRD-jaarvergadering (naast de projecten Uitbreiding Luchthaven en Voltooiing Rondweg, en mogelijk nog anderen).
3. De afspraak is gemaakt met B.P. Ousanov dat de gemeente St.Petersburg de aanvraag voor financiering van het project Integraal Waterbeheer bij de EBRD zal verzorgen. Het WL zal, indien daarom gevraagd wordt door St.Petersburg, inhoudelijke en procedurele steun verlenen.
4. Er is een nieuw protocol opgesteld naar aanleiding van het bezoek van de Nederlandse delegatie. (zie bijgevoegd concept-protocol[1])
5. Er is een opzet gemaakt voor een projectplan voor de opzet van Integraal Waterbeheer in de regio St.Petersburg. Deze opzet zal -enigszins herschreven- de basis vormen voor het voorstel naar de EBRD. (zie bijgevoegde concept-outline[2])

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[1] Dit is de laatste concept-versie van de protocol-tekst. Ter plaatse is op aanwijzing van de consul, D. Kop, nog een wijziging aangebracht. De strekking van de wijziging was dat de Russische en de Engelse versie van het protocol een gelijke rechtsgeldigheid hebben. De exacte tekst hiervan is op het ogenblik niet in mijn bezit.

[2] Dit is (zoals bij het protocol) de laatste concept-tekst. Op de laatste dag zijn er nog een aantal kleine wijzigingen doorgevoerd. Met name in het hoofdstuk financien is nog een en ander gewijzigd. Dit heeft tot gevolg gehad dat het totaal bedrag van 900.000,- ecu naar 950.000,- ecu is gegaan. Ook hiervan heb ik op het ogenblik niet de definitieve tekst. Overigens is het hoofdstuk financien nog niet met de russen besproken.

Annex C report of Mr. J.R. Hoogland on the cooperation project Integrated Water Management St. Petersburg (in Dutch)

Verslag

Ministerie van Verkeer en Waterstaat
Directoraat-Generaal Rijkswaterstaat
Hoofddirectie van de Waterstaat

Deelnemers
Nederlandse delegatie: ir. J.R.Hoogland, ir.P.Kruitwagen (RiZa), Dr.G.S.Rodenhuis, drs. P.Glas en ir. H.van Pagee (Waterloopkundig Laboratorium Delft), en
Russische delegatie: zie bijlage 1

Afschrift aan
Deelnemers (alleen bijlagen 3 tm 5, 7 en 8), B (alle bijlagen), AI, dg en plv. sg (alleen bijlagen 7 & 8)

Van
Missie St Petersburg

Nummer
A 111

Opgemaakt door
ir.J.R.Hoogland

Doorkiesnummer
070-3744300

Datum bespreking
28 maart - 4 april 1994

Bijlage(n)
8

Plaats bespreking
St Petersburg, Rusland

Aanvang/einde

Onderwerp
Samenwerkingsproject Integraal Waterbeheer St Petersburg

Het bezoek van de Nederlandse delegatie aan St Petersburg had tot doel nadere invulling te geven aan het samenwerkingsproject Íntegraal Waterbeheer mede ten behoeve van de 3e jaarlijkse vergadering van de Europese Ontwikkelingsbank **EBRD** in april in St Petersburg. Deze bank zou de samenwerking moeten financieren.

Het contact met de St Peterburgse stedelijke overheid is voortgekomen uit een vraag vanuit de bouwers van de Neva-Dam aan het WL in Delft. De dam met stormvloedkering stond ter gelegenheid van de omwentelingen als symbool van de oude machthebbers onder sterke kritiek: de waterkwaliteitsproblemen in de Nevabaai voor St Petersburg zouden veroorzaakt zijn door de aanleg van de dam; de nieuwe machthebbers vonden dat de dam (80% gereed, maar het werk ligt al enige jaren stil) afgebroken moest worden. In Internationale Commissie onder leiding van ir. Hein Engel gecoördineerd door WL olv Rodenhuis concludeerde in december 1990, dat er geen invloed was van de dam op de waterkwaliteit, maar dat deze problematiek parallelle aan de dam zou moeten worden aangepakt.
In september 1992 bezocht een Russische delegatie met voor en tegenstanders van de dam Nederland. Daar werd afgesproken, dat een samenwerkingsproject Integraal Waterbeheer zou worden uitgewerkt (zonder de financiering te regelen). Voor de opzet van de samenwerking is een werkgroep opgericht onder gezamenlijk voorzitterschap van dep. mayor Sergeyev en Hoogland. Het bezoek en de Nederlandse betrokkenheid hebben er toe geleid dat de burgemeester Sobchak (oorspronkelijk fel tegenstander) inmiddels niet meer tegen zijn. In januari 1994 is op verzoek van Sobchak een decreet door Jeltsin getekend, waarin geregeld wordt, dat de Russische Federatie de gelden voor de afbouw van de dam beschikbaar zal stellen, zodat de dam omstreeks 2000 gereed kan zijn. Tot op heden zijn de werkzaamheden nog niet hervat.

Alle contacten tussen NL en St Petersburg zijn tot en met september 1992 door de Russische dammenbouwers (Sevenard) gefinancierd. Het bezoek van april 1994 is door V&W gefinancierd als aanloop naar EBRD-financiering.

Bij de start van het bezoek bleek, dat de Russische Co-chairman de dag voor het bezoek met zijn gehele afdeling uit hun functie waren gezet. Een andere dep. mayor Jakovlev zou zijn rol overnemen, maar de gastheer (Usanov als hoofd van LenMorchachita) had geen idee hoe Jakovlev tegenover het project stond. Een eerste contact op dinsdag zou enige duidelijkheid moeten verschaffen. Geleidelijk aan werd duidelijk dat ook de positie van Usanov niet zeker was. Gevolg was dat de hele week in het teken stond van organisatie-achtige aspecten en dat veel geïnvesteerd moest worden in het verkrijgen van commitment voor het project. Het programma (bijlage 2) liet daardoor nauwelijks ruimte voor het verder uitwerken van het EBRD-project. Dit is zo veel mogelijk opgelost door het opsplitsen van de delegatie.

In de eigenlijke presentaties op dinsdagochtend heb ik een voornamelijk organisatorisch verhaal gehouden (bijlage 3), waarin op de noodzaak van de combinatie flood-protection en integrated watermanagement gewezen werd. Het gezamenlijk aanpakken van de overstromingsproblematiek en de waterverontreiniging is in St Petersburg de enige mogelijkheid om de nog steeds aanwezige politieke weerstand tegen de dam te apaiseren.

Na een aantal positieve contacten met Jakovlev is er mede door de delegatie een stuk voorbereid dat van Jakovlev naar Sobchak gericht zou worden (bijlage 4). De Nederlandse delegatie heeft alleen een handgeschreven engelse versie beschikbaar. De hele week was er steeds een groot vertaalprobleem omdat er steeds russische stukken werden aangeleverd. Van dit stuk is er ook een versie met de naam van Sobchak eronder, waarvan ik de status niet ken (bijlage 5).

Gedurende de week is er desalniettemin een "outline" van het project opgesteld (bijlage 6), waarvan is afgesproken, dat dit in de komende twee weken nog verder zal worden uitgewerkt. In hoofdzaak staat daar in, dat het geïnvesteerd vermogen in inundeerdbare gebieden groot is, dat afmaken van de dam dus essentieel is, en dat daarom parallel daaraan aan de opzet van de verbetering van de waterkwaliteit gewerkt moet worden. Zowel instrumenteel, organisatorisch als qua opleiding is daar begeleiding vanuit Nederland nuttig. Dit zal gefinancierd moeten worden. Voorlopige begroting ca. 900.00 Ecu.

Aan het einde van de week is er een protocol getekend (bijlage 7), is er een perspresentatie geweest en is door Sobchak besloten, dat het project op de EBRD-meeting gepresenteerd zal worden. De nederlandse delegatie heeft toegezegd de Nederlandse autoriteiten (die bij de EBRD-meeting zijn) op de hoogte te zullen brengen van het belang van het project.

Geheel buiten de orde ligt er ook nog een andere vraag van Sobchak. In een officiële brief (bijlage 8) vraagt hij hulp bij de oplossing van de baggerbergingsproblematiek van St Petersburg. Ik heb toegezegd de vraag in Nederland te zullen bespreken. (Iets voor NZ en Rotterdam?). Een eerste reactie van Nederlandse zijde tijdens de EBRD-meeting zou niet slecht overkomen! Hier liggen kansen.

Ladies and Gentleman,
dear collegues involved with watermanagement and flood protection,

Before I give you some remarks about watermanagement and flood protection in the Netherlands, I like to introduce my delegation.

My name is Jan Hoogland, in english High Land. That might be a bit strange in a country, which name is the Netherlands, what means Low Lands, because 60% of the country lies below the levels of the highest floods from rivers and the sea. The economic most important western part of the country, which is called Holland even lies for 100% below sea level. Our country should not exist anymore without floodprotection and watermanagement.

The close connection between flood protection, watermanagement and the economic potential of transportation were the reason that Transport, Public Works and Watermanagement, were brought together within one ministery. Within this Ministry of Transport, Public Works and Watermanagement, I am the director general for Watermanagement and flood protection.

So note! All environmental issues connected with water are dealt within this ministry, **not** in the ministry for the environment!

Together with my collegues for high-way construction and maintanance and management and for legislation we form the top of Rijkswaterstaat, an organisation of 10.000 persons and a budget of 2,5 biljon dollar a year, responsable for the maintainance, the planning, the management of the main infrastructure. That includes the highways but also the management and the maintainance of the main rivers Rhine and Meuse, the big fresh water lakes, the coastal waters and the North Sea. In the flood protection part of our work land reclamation and the planning and the construction of main dikes, sluices and stormsurge barriers is also included. This organisation is also policymaking and for legislation and regulation on this issues in her role as the advisor of the minister.

My first contacts with Russia were three years ago in Moscow where I represented my minister on the signing of the Memorandum of Understanding between mr Vorontsov of Goskrompriroda and the Dutch Minister of the Environment Hans Alders.

My organisation has regional directorates for maintanance and management. For the more specialistic tasks we have a few directorates for studies. Within the directorate for the intergrated watermanagement Peter Kruytwagen is working as a specialist.

In a low lying delta with a hig population density - we need a high specialised knowledge on watermanagement and hydraulics. But this should not necessarity be all organised by the State. It is the Dutch policy to separate between public and private and we think we can organise that in a privatised organisation: Delft Hydraulics. Some of you know this organisation already. This institute has proved in practice that our policy about privatisation was a good policy.
Dr Rodenhuis is director Reearch and Development of this institute. He was here in St Petersburg several times as the coordinator of the International Commission advising about your Storm Surge Barrier. Mr Hans van Pagee also was involved with the activities of the Commission as a waterquality specialist. Mr Peter Glas is an ecologist working with Delft Hydraulics; he is also coordinating projects in Eastern Europe.

In September 1992 a delegation from your side under supervision of the deputy Mayor of St Petersburg Mr Segeev visited the Netherlands. There we signed a protocol for cooperation in the field of integrated watermanagement and we decided to set up a working group under the supervision of the chairmanship of the deputy mayor and me together.
Today I am here as the co-chairman from the Dutch side; and I am glad to meet this afternoon my new co chairman Mr Lakovjev from your side.

I like to give you some expierience of the Dutch in watermanagement and flood protection and in my presentation I will emphasise on the close connection between watermanagement, flood protection, environment, economic potential, administration, legislation and financing.

The situation of the Netherlands in the common delta of a number of large European rivers has led to a continuous preoccupation with water. The Delta is used for transportation, watersupply to agriculture and industry and as drinking water, but sometimes misused for waste discharge. Characteristic is the struggle against water as 60% of the Netherlands can be flooded by the sea or the rivers!

The Netherlands history of 800 years of building dikes - often on soft soils - and adapting rivers, estuaries and inland seas to human use and protecting under (sometimes changing) natural conditions as sea level rise, land subsidence and flood disasters has led finally to a coherent approach to the protection against water, in which concern for the environment, technical knowledge, science, political decision making, management and legislation are brought together.

The main line of our approach is:

1 For the required level of flood protection and watermanagement, **standards** are agreed upon in parliament, whereby an integral assesment of interest takes place.
2 **Management and maintainance** of flood protection and water management are executed by local **waterboards** and financed by taxes imposed on the people directly involved, who can have a say in these matters in proportion to their contribution.
3 In the plans for flood protection and in the watermanagement we folow an integrated approach in which different interest as nature protection, environmental impacts, agriculture, landscape, industry, recreation and finance.
4 Knowledge development for all relevant aspects (discharges, waterlevels and their frequency of occurence and their possible trends, geotechnics, techniques for design and maintanace of dikes and barriers, ecological data, decision making systems, tecniques for wastewatertreatment) is taken up, stimulated and financed **nationally**, takes place partly in government institutes, but for the greater part in private specialised institutes capable of blending national knowledge with world wide expertise.

I like to say some extra words about the organisational aspects of the improvement of the waterquality during the last 25 years. I told you about the waterboards in the Netherlands. That authority is involved with watermanagement (including the purification of waste water) and flood protection with their own financing system of an regional water system, that means something like a catchment area. [In Holland the main rivers are the responsibality of my organisation.] When I compare your situation with ours, than the whole catchment area of the Ladoga Neva system should have one organisation for watermanagement and flood control.

For the improvement of the water quality we made in 1970 the Surface Water Pollution Act. The basic principles of this act are:

1 No one is allowed to discharge waste water without permission
2 Everyne who pollutes pays a levy to the rate of the pollution following the principle of the polluter pays.
3 All the money from the levies is earmarked for the purification of the waste water, on the cost of the organisation, and on studies.
4 The enforcement of the system is done by the same organisation.

May be, it is strange for you: but in Holland even the governmental organisations and factories need a permit when they discharge and they have to pay when they pollute. We even pay to our own organisation. But that money we can only spend on watermanagement purposes.
Since 1970 we earned about 1 billion dollar levies and we spend the same budget on improvement of the system. During that period we succeeded in cleaning our water: The decrease of biological oxygen demand was more than 90% of the pollution of 1970. Now we are working on nutrients, heavy metals and pesticides.

I like to finish with an experience on the flood protection field. We have our standards and most of our constructions are already functioning. For one river, the Meuse, we thought standard were not necesary, because a flood could not kill people and should only give inundations. But during the last Christmas period we had a flood with a return period of ones in 250 year. May be because we have elections this year, but all our major politicians had to visit with the TV the area. During a fortnight it was the main issue on the TV, and afterwards my minister had to promise a special commission in which Delft Hydraulics is involved, to suggest sollutions.
When I compare that situation with yours here in St Peterburg, then you have your standards, but your barrier waites for completing. I do hope that your town with all its economic activitis, with all its cultural values and with its dense population, will not be surprised by a surprise like we had with Christmas.

Памятка для беседы
с А.А.Собчаком

В 1992 году голландские ученые, специалисты и руководители Департамента водных ресурсов Нидерландов внесли предложение о разработке Интегральной системы управления и научной поддержки принимаемых решений для акватории Санкт-Петербурга, в которой комплекс защитных сооружений от морских наводнений должен сыграть ключевую роль.

В связи с Вашим обращением к Президенту России Б.Н.Ельцину о необходимости срочного завершения строительства Комплекса работа по подготовке проекта Интегральной системы управления и его экономическому и экологическому обоснованию для представления на апрельское заседание руководства ЕБРР находится в завершающей стадии.

В состав проекта входит целый ряд разделов:

- пакет компьюторных управляющих моделей акватории с акцентом на её морскую часть ;
- интегральные критерии региональных норм экологической безопасности ;
- программа дальнейшего совершенствования материально-технической базы мониторинга ;
- схема действий исполнительных структур управления при решении вопросов о размещении в прибрежных районах объектов портово-технологического и другого назначения ;
- предложения по организации сухопутного дампинга и берегоукрепления ;
- система прогнозирования и предупреждения катастрофических наводнений;
- подготовка кадров и т.д.

Во время встречи с находящимися в городе голландскими специалистами утверждалось, что без поддержания водной системы города на соответствующем уровне и управления ею, без оптимального развития инфраструктуры речных путей, морской акватории и собственно портов экономическое укрепление Санкт-Петербургского региона будет серьезно ограничено, а многие направления настоящих и будущих инвестиций могут просто не принести ожидаемых результатов. И это - главный лейтмотив предлагаемого проекта.

Необходимым условием его разработки голландские ученые и специалисты считают создание соответствующей организации по проведению в жизнь Интегрированной системы управления.

В разработке проекта могут принять участие голландские институты "Дельфт Гидравлик" и "Риза", ряд институтов Санкт-Петербурга, "Ленкомэкология" и управление "Ленморзащита".

В настоящее время проект внесен в установленном Вами порядке в экспертную комиссию мэрии для представления участникам апрельского совещания ЕБРР.

Считаем возможным провести его специальную презентацию, так как использование многофункциональных возможностей Комплекса сооружений защиты Санкт-Петербурга от наводнений является приоритетным в решении многих экономических и социальных задач в развитии города.

31.03.94

МЭР САНКТ-ПЕТЕРБУРГА

Р А С П О Р Я Ж Е Н И Е

от _____ № _____

О Департаменте водного хозяйства Мэрии Санкт-Петербурга.

В целях создания системы государственного территориального управления водным хозяйством Санкт-Петербурга, организации и практического решения неотложных и перспективных задач по осуществлению взаимодействия и координации деятельности предприятий и организаций независмо от их ведомственной принадлежности и форм собственности, связанной с использованием акватории реки Невы-Невской губы - восточной части Финского залива в административных границах Санкт-Петербурга ; обеспечению воспроизводства природных ресурсов, включая мелководные нерестилища, береговой дампинг донных отложений и защиту берегов; обоснованию и соблюдению очередности и строительства очистных и защитных сооружений, объектов портового строительства и т.п. :

I. Преобразовать управление "Ленморзащита" в Департамент водного хозяйства на правах самостоятельного юридического лица, включив в его ведение АП "Ленводхоз".

2. Подчинить Департамент водного хозяйства первому заместителю мэра - Председателю Комитета по экономическому развитию.

3. Поручить Департаменту водного хозяйства вопросы хозяйственной деятельности в акватории, регламентированные для территориальных органов управления Постановлением Совета Министров - Правительством Российской Федерации от 5.04.93г. № 280.

4. Возложить на Департамент водного хозяйства:

4.I. Выполнение функций единого заказчика мэрии по проектированию строительству и реконструкции :

- комплекса сооружений защиты города от наводнений, кольцевой дороги вокруг Санкт-Петербурга, портовых, технологических и других

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гидротехнических объектов в Невской водной системе в административных границах Санкт-Петербурга ;

- защиты берегов Невской губы и восточной части Финского залива от разрушений, их восстановления и превращения в рентабельные реакреационные зоны, берегового дампинга донных отложений ;

- объектов для воспроизводства природных ресурсов Невской губы, в т.ч. по созданию мелководных нерестилищ ;

- объектов, связанных с содержанием, исследованиями и оздоровлением р.Невы-Невской губы восточной части Финского залива в административных границах Санкт-Петербурга;

- объектов мэрии Санкт-Петербурга на Черноморском побережье в Крыму.

4.2. Координацию водохозяйственной деятельности в Невской водной системе.

4.3. Эксплуатацию вводимых в строй сооружений комплекса защиты города от наводнений и других гидротехнических, геодинамических, а также сопутствующих им объектов.

5. Назначить директором Департамента водного хозяйства Усанова Бориса Павловича, освободив его от обязанностей начальника управления "Ленморзащита".

6. Директору Департамента водного хозяйства в двухмесячный срок в установленном порядке представить в мэрию для утверждения структуру, штатное расписание и положение о Департаменте.

7. Установить, что финансирование деятельности Департамента и ег структурных подразделений является смешанным в зависимости от решаемых ими задач.

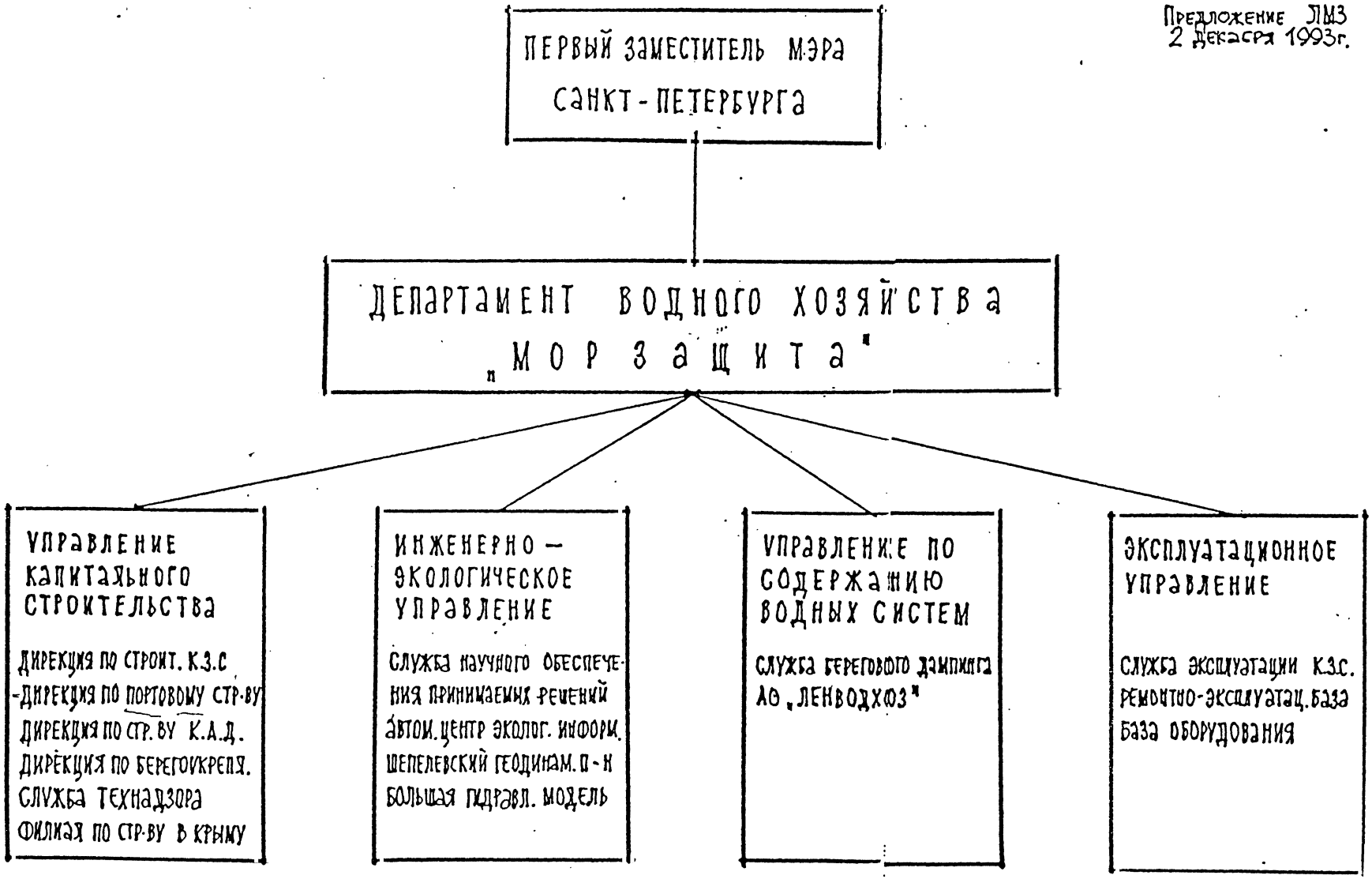
Финансовому Комитету предусмотреть на 1994 год содержание Департамента из городского бюджета.

8. Управлению делами Мэрии в I квартале 1994г. рассмотреть вопросы о размещении и оснащении Департамента водного хозяйства по его представлению.

9. Контроль за выполнением распоряжения возложить на первого заместителя мэра Д.В.Сергеева.

Мэр А.А.Собчак

Предложение ЛМЗ
2 декабря 1993г.



Annex D protocol on the meeting between Russian and Netherlands' delegations March 26 - April 2 in St. Petersburg

СМОЛЬНИНСКИЙ РАЙОН

САНКТ-ПЕТЕРБУРГ
1994

В районе Песков в различное время проживало немало известных людей, оставивших заметный след в литературе, искусстве, науке (Ф. М. Достоевский, В. В. Стасов, Г. И. Успенский, А. Н. Толстой, Ю. Н. Тынянов, А. П. Чехов, П. К. Козлов и другие).

Во второй половине XIX века в районе началось строительство медицинских учреждений. В 1875 году открылась первая в России бесплатная клиника Свято-Троицкой общины сестер милосердия (ныне НИИ переливания крови); рядом основан Рождественский лазарет (ныне Институт гигиены труда). По инициативе С. П. Боткина была построена Александровская больница, которая с 1889 года носит имя основателя.

Начало промышленному развитию района было положено в 1893 году, когда началось строительство Невской бумагопрядильной фабрики. Десять лет спустя началось строительство Николаевской (ныне Октябрьской) железной дороги. В конце 1870-х годов был создан Рождественский парк общества конно-железных дорог (ныне трамвайный парк им. В. С. Смирнова). В 1897 г. на берегу Невы в районе возникла одна из крупнейших по тому времени электростанций (ныне 2-я ТЭЦ). На территории района была построена первая в Петербурге водопроводная станция.

Название Смольнинский район получил в 1919 году — это один из ведущих районов города. В настоящее время его территория составляет 730 га, население свыше 100 тысяч человек. Район имеет сложную многопрофильную структуру. В последние годы он формируется как центр коммерческой и предпринимательской деятельности с устойчивой положительной тенденцией в доходной части бюджета. Это, в свою очередь, позволяет эффективно решать многие социальные проблемы региона, а именно — реконструкцию жилого фонда, содержание муниципальных служб, приобретение оборудования и инвентаря для учреждений образования и здравоохранения, благоустройство района.

Смольнинский район — один из старейших в Санкт-Петербурге — имеет богатую разнообразными событиями историю. В прошлом район этот часто называли Песками. Точнее, Песками называлась местность, занятая нынешними десятью Советскими, а также пересекающими их Мытнинской и Дегтярной улицами, Суворовским, Греческим и Лиговским проспектами. Это самая высокая часть города, которая никогда не затоплялась во время наводнений. Название „Пески" произошло от песчаной гряды, протянувшейся по Лиговке и вдоль Суворовского проспекта до реки Невы. В XII—XIII веках по такой гряде проходила дорога из Великого Новгорода до села Спасского (в районе современного Смольного).

Новгородская дорога сыграла существенную роль в формировании района. Направление ее обусловило застройку Песков в первые годы существования нашего города. В июле 1710 года в районе деревни Виктория по распоряжению Петра I был заложен монастырь „во имя святой троицы и Александра Невского". Поблизости от этого строительства стали быстро появляться неказистые домишки работного люда. Так возникла Подмонастырская, или Невская, слободка. При сооружении Александро-Невского монастыря принимали участие мастера, выписанные из Старой Руссы и Новгорода, которые селились по землячествам. Соответственно и улицы, где они проживали, стали называться Старорусской и Новгородской. Эти названия улиц сохранились и поныне.

Неподалеку от Лавры Петр I устроил Смоляной двор. Рядом был выстроен небольшой летний дворец царя, который затем перешел к его дочери Елизавете и стал называться Смольным дворцом. В 1748 году по распоряжению Елизаветы дворец был разобран и на его месте заложен „девичий монастырь с церковным и прочим строением" (архитектор В. В. Растрелли). В 1806—1808 годах рядом с монастырем был построен Смольный институт (архитектор Д. Кваренги), куда переехали воспитанницы-„смолянки".

В первой половине XIX века район Песков делился на Каретную часть и Рождественскую, а со второй половины XIX века весь район Песков стал называться Рождественским районом.

PROTOCOL
of the visit of the Delegation of Netherlands scientists and experts headed by the director of Flood Protection and Water Management of the Ministry of Transport and Public Works and Water Management (Rijkswaterstaat) Jan R. Hoogland to St.Petersburg (28 March - 2 April 1994)

The delegation of the Netherlands scientists and experts consisting of:
Jan R. HOOGLAND,
Director of Flood Protection and Water Management of the Ministry of Transport Public Works and Water Management (Rijkswaterstaat);

Peter G. KRUITWAGEN,
Senior specialist on integrated water management, senior flood spcialist, of the Ministry of Transport Public Works and Water Management (Rijkswaterstaat);

Dr. Gaele S. RODENHUIS,
Director Research and Business Development of DELFT HYDRAULICS;

Hans (J.A.) van PAGEE,
Head of the department for Water Quality, senior water quality modeller, of DELFT HYDRAULICS;

Peter C.G. GLAS,
Regional manager Central and Eastern Europe, Head of the Ecology Department of DELFT HYDRAULICS,

stayed in St.Petersburg from March 26 untill April 4, 1994.

The delegation was invited by the Mayor's Office of the City of St.Petersburg in the framework of the Memorandum of Understanding on Environmental Cooperation between The Russian Federation and The Netherlands and as a follow-up on the visit of a Russian delegation on 9-11 September 1992 to The Netherlands. The Netherlands delegation was hosted by "Lenmorzaschita", who was responsible for all logistic arrangements and planning of the programme.

The delegation visited the construction site and the already finished parts of the St.Petersburg Flood Barrier, the VNIIG institute named after Vedeneev, the Hydrotechnical Faculty of the St.Petersburg Technical University, the Laboratory for modelling in the St.Petersburg Centre for Ecological Safety (Russian Acedemy of Science) and the Institute of Limnology (Russian Academy of Science). The delegation participated in the meeting with scientists and experts of the city which was held in the Department "Lenmorzaschita".

The delegation had discussions with the First Deputy Chairman of the Committee for economy and finance of the Mayor's Office of St.Petersburg I.A. Yuzhanov, Chief of the Department for Protection of the Environment,

Committee for municipal works, A.S. Bayev, Chief of the Department of natural resources and ecology, I.M. Pimenov, President of the St.Petersburg Association of science and engeneering societies, honoured President of the St.Petersburg Academy of Engineering, member of the Russian Academy of Science, I.A. Glebov, Head of administration of Pavlovsk, N.F. Zavialova and Director-General "Avdodorstroitrensirvis" V.A. Dosienko.

The delegation visited "Lencomecologia" and was received by the First Deputy Mayor of St.Petersburg V.A. Jakovlev. The delegation had contacts with Consul-General of The Netherlands, Mr. W. Wildeboer and the Consul D.J. Kop.

The delegation gave a press conference for journalists of St.Petersburg.

As a result of the discussions both sides agreed on the following:

1. To continue the work on realisation of the Protocol on the visit of the delegation of St.Petersburg to The Netherlands (6-11 September 1992).
2. The chairmanship of the St.Petersburg part of the joint Working Group on realisation of the Protocol mentioned under point 1 was undertaken by mr. V.A. Jakovlev, who will specify the members of the group within one month.
3. The Netherlands side, before the end of April, will specify and mail to V.A. Jakovlev the list of members of the Netherlands part of the Working Group on the realisation of the Protocol mentioned under point 1.
4. Both sides consider it not only possible but also neccessary to develop jointly the project "Integrated Water Management for the Ladoga-Neva-Gulf water system and the City of St.Petersburg" with the following contents:
   - a set of computerized management models of the water system focussing to the marine part,
   - integral criteria of regional standards of ecological safety,
   - program of further development of the technical facilities of monitoring,
   - scheme of actions for management methods for the proper location of harbours and other objects in coastal regions,
   - proposals on management of dumping on shore and the protection of shores,
   - system for extreme-flood forecasting and warning,
   - training of personal etc.
5. The project mentioned under point 4 should be closely coordinated with the international project "Gulf of Finland, year 1996", to be developed from the Russian side by a number of institutions under scientific guidance of proffessor V.A. Rumiantsev financed by the Ministry of Environment of the Russian Federation.
6. The Mayor's Office will present the Project mentioned under point 4 at the 3rd annual meeting of the EBRD in April, while the Netherlands delegation, supporting this presentation, will bring this to the attention of the Netherlands Authorities with the purpose to obtain support for this project at the forthcoming meeting of the EBRD.

7. Both sides ask the Mayor of St.Petersburg A.A. Sobchak to make a decission in a short time on the setting up in the Mayor's Office of the appropriate organisation to make it possible to implement the "Integral Water Management for the Ladoga-Neva-Bay water system and the city of St.Petersburg".
8. Both sides expressed their concern on the low level of activity on the completion of the Flood Barrier and the environmental infrastructure, and each day we are losing the opportunity of finalising it before the end of this century which may bring great troubles to the city and which does not create the proper conditions for the economic and social development of the city. They are also concerned about the technical state of the construction of the Barrier.

Discussions during the visit were held in a spirit of co-operation and mutual understanding.

The Russian and the English text have equal legal authority.

J.R. Hoogland

Director of Flood Protection and Water Management of the Ministry of Transport Public Works and Water Management (Rijkswaterstaat);

V. Jakovlev

First Deputy of the Chairman of the Government of St.Petersburg

ПРОТОКОЛ

о пребывании в Санкт-Петербурге делегации ученых и специалистов Нидерландов во главе с Директором Департамента защиты от наводнений и управления водными ресурсами Министерства транспорта, общественных работ и управления водными ресурсами г.Яном Хугландом.

Делегация ученых и специалистов Нидерландов в составе:

Я.Хугланд	- Директор Департамента защиты от наводнений и управления водными ресурсами Министерства транспорта, общественных работ и управления водными ресурсами.
П.Крютваген	- Старший специалист по интегрированному управлению водными ресурсами и наводнениям Министерства транспорта, общественных работ и управления водными ресурсами.
Г.Роденхойс	- Директор по научному и деловому развитию "Дельфт Гидравлик".
Н.ван Пахе	- Руководитель отдела качества воды, старший специалист по моделированию качества воды "Дельфт Гидравлик".
П.Глас	- Управляющий проектами по Центральной и Восточной Европе, руководитель экологического отдела "Дельфт Гидравлик"

находилась в Санкт-Петербурге с 26 марта по 4 апреля 1994г.

Делегация была приглашена мэрией Санкт-Петербурга в рамках Меморандума о взаимопонимании по вопросам экологического сотрудничества между Российской Федерацией и Нидерландами и как следствие визита российской делегации 9-11 сентября 1992 года в Нидерланды.

Голландская делегация была гостем управления "Ленморзащита", которое отвечало за все организационные вопросы и планирование программы.

Она посетила строительную площадку и эксплуатируемые объекты Комплекса сооружений по защите Санкт-Петербурга от наводнений, АО "ВНИИГ им.Веденеева", гидротехнический факультет Санкт-Петербургского технического университета, лабораторию моделирования экологически безопасных территорий Санкт-Петербургского научно-исследовательского центра экологической безопасности Российской Академии Наук и институт Озероведения Российской Академии Наук. Она приняла участие во встрече с учеными и специалистами города, которая состоялась в управлении "Ленморзащита".

Делегация имела беседы с Первым заместителем Председателя Комитета по экономике и финансам мэрии Санкт-Петербурга И.А.Южановым; начальником управления "Ленморзащита" мэрии Санкт-Петербурга Б.П.Усановым; начальником управления по защите окружающей среды Комитета по городскому хозяйству А.С.Баевым; начальником отдела естественных ресурсов и экологии Е.М.Пименовым; Президентом Санкт-Петербургского Союза научных и инженерных обществ, почетным президентом Санкт-Петербургской Инженерной Академии, академиком Российской Академии Наук И.А.Глебовым; Главой администрации г.Павловска Н.Ф.Завьяловой и генеральным директором "Автодорстройтранссервиса" В.А.Досенко.

Делегация нанесла визит в "Ленкомэкологию" и была принята Первым заместителем Председателя Правительства Санкт-Петербурга В.А.Яковлевым. Имела контакты с Генеральным консулом Нидерландов г-ном В.Вилдебуром и консулом Д.Копом.

Делегация дала пресс-конференцию для Санкт-Петербургских журналистов.

В результате обмена мнениями стороны пришли к следующему:

I. Продолжить работу над реализацией Протокола о пребывании делегации Санкт-Петербурга в Нидерландах 6-II сентября 1992 года.

2. Руководство Санкт-Петербургской части совместной рабочей группы по реализации указанного в §I Протокола принимает на себя В.А.Яковлев и в месячный срок уточняет ее состав.

3. Голландская сторона до конца апреля т.г. уточняет и высылает В.А.Яковлеву состав голландской части рабочей группы по реализации Протокола, упомянутого в §I.

4. Стороны считают не только возможным, но и необходимым разработку совместными усилиями проекта "Интегральная система управления водными ресурсами Санкт-Петербурга" в состав которого входят разделы:

- пакет компьютерных управляющих моделей акватории с акцентом на ее морскую часть ;
- интегральные критерии региональных норм экологической безопасности ;
- программа дальнейшего совершенствования материально-технической базы мониторинга ;
- схема действий исполнительных структур управления при разрешении вопросов о размещении в прибрежных районах объектов портово-технологического и другого назначения ;
- предложения по организации сухопутного дампинга и берегоукрепления;
- система прогнозирования и предупреждения катастрофических наводнений ;
- подготовка кадров и т.д.

5. Указанный в §4 Проект должен быть тесно увязан с международным проектом "Финский залив-96", разрабатываемым с российской стороны рядом институтов под научным руководством д.г.н. В.А.Румянцевым за счет средств Минприроды Российской Федерации.

6. Руководство мэрии презентует указанный в §4 Проект на 3-ем ежегодном заседании ЕБРР в апреле, а нидерландская делегация, поддерживая эту презентацию, даведет до сведения властей Нидерландов необходимость поддержки этого Проекта на заседании ЕБРР.

7. Стороны обращаются к мэру Санкт-Петербурга А.А.Собчаку с просьбой в самое ближайшее время принять решение о создании в мэрии соответсвующей структуры для проведения в жизнь Интегральной системы управления ресурсами.

8. Стороны выразили беспокойство в связи с низкими темпами завершения строительства Комплекса по защите Санкт-Петербурга от наводнений и уходящей с каждым днем возможностью закончить его до конца столетия, что может принести большие неприятности и не создает должных условий для его экономического и социального развития; техническим состоянием объектов строительства и экологической инфраструктуры.

Визит прошел в духе взаимопонимания и делового сотрудничества.

Английский и русский тексты Протокола имеют одинаковую юридическую силу.

Я.Хугланд,

Директор Департамента водных ресурсов Министерства транспорта и общественных работ Нидерландов, глава делегации

2 апреля 1994 года

В.Яковлев

Первый заместитель Председателя Правительства Санкт-Петербурга

2 апреля 1994 года

г.Санкт-Петербург

ПЕРВЫЙ ЗАМЕСТИТЕЛЬ МЭРА САНКТ-ПЕТЕРБУРГА

31.03.94 № 2.7.5-13-9

Директору Департамента
водных ресурсов Министерства
транспорта и общественных работ
господину Хугланду

Уважаемый господин Хугланд!

Прежде всего позвольте мне поблагодарить Вас за то Ваше внимание, которое уделяете Вы экологическим проблемам Санкт-Петербурга и особенно методам математического моделирования и использования вычислительной техники в управлении качеством воды и состоянием акватории нашего города.

Искренне сожалею, что напряженная программа пребывания Ваших специалистов в Санкт-Петербурге не позволила нам в достаточной мере обсудить ряд проблем, связанных с улучшением состояния водной системы города.

Я приглашаю Ваших специалистов посетить Санкт-Петербург в мае 1994 года и обсудить вопросы использования донных отложений при очистке рек и каналов города для образования искусственных территорий в Невской губе.

Опыт Ваших специалистов мог бы нам позволить ускорить рассмотрение и согласование разработанного нами технико-экономического обоснования по использованию донных отложений.

Координаторами работы по данному проекту являются начальник Управления по защите окружающей среды А. С. Баев (тел. 2781067, факс 2781506) и начальник отдела международных финансовых организаций Комитета по внешним связям. С. В. Балашов (тел. 2781679).

Мы надеемся на продолжение нашего взаимовыгодного двустороннего сотрудничества.

С уважением

В. А. Яковлев

Annex E outline of the project: ***Integrated Water Management for the Ladoga-Neva-Gulf water system and the City of St. Petersburg***

OUTLINE OF THE PROJECT

Integrated water management for the Ladoga-Neva-Gulf water system and the City of St.Petersburg

April 1994

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1. Preamble

In February 1993 a proposal was submitted to the EBRD by a joint Russian-Netherlands working group for the implementation of the principals and methods of integrated water management in St.Petersburg. At that time the Netherlands Government had agreed in principle that if the Bank were to select this project for financing, it would favour the utilization of the Netherlands trustfund budget for the implementation of (part) of the project.

However, the EBRD finally declined to put the project before the Board of Governors for several reasons:

1. in 1992 and until February 1993 very limited progress had been made with any investments in the St. Petersburg region, both in the private and public sector;
2 the Bank was of the opinion that the economic dimensions of the proposal where not clearly stated, and the benefits in terms of potential (short term) investments by the Bank not clearly worked out.
3. there seemed to be some overlap in the approach between the Russian-Netherlands proposal and some ongoing (pre)investment or (pre)feasibility studies commissioned by the Bank and other financiers.
4. there seemed to be some overlap in the objectives with respect to the environmental goals of the project and those of other frameworks, like the Baltic Sea Programme, already subsidized by the EBRD, EU and others.

Since February 1993, some important changes have taken place that would allow for reconsideration and extension of the project:

1. the political dead-lock with respect to the completion of the storm-surge barrier has been resolved. The completion is planned to be financed through federal and regional funds (in total 470 billion roubles are needed or 60 billion/year).
2. a decision has been reached to set up a unit within the City of St.Petersburg that will be responsible for the planning and implementation of Integrated Water Management of the Neva River, Neva Bay and Eastern Finnish Gulf area. This unit will have the responsibility for all operational aspects of hydrological management and water quality management in surface waters, including the operation of the gates in the Storm Surge Barrier. Also the unit will be responsible for environmental impact assessment and optimal planning of proposed economic activities in view of possible adverse effects on the environmental status of the **surface waters** around St.Petersburg. Also, with other departments in the city, the Unit may have a responsibility in the planning process of the physical water infrastructure (e.g. the adaptation of the barrier to accommodate the Ring Road around St.Petersburg, or the planning of new harbours and terminals in the vicinity of the barrier).

From 26 March - 2 April 1994 a Netherlands delegation visited St.Petersburg at the invitation of the Mayors Office. The Netherlands delegation was headed by the Director responsible for flood protection and water management of the Netherlands Ministry of Transport, Public Works and Water Management. The main purpose of the visit was to evaluate the progress made on the completion of the dam, to advise on the setting up of the Unit for IWM, and to re-evaluate the proposal earlier submitted to the EBRD.

By all participants, i.e. St.Petersburg Municipality, participating Russian institutions and the Netherlands delegation is was concluded that these three elements should be worked out in one common **project definition** that will be put forward by the Russian delegation to the EBRD annual board meeting 18-19 April 1994.

The guiding principles for the proposal are the following, namely:

1. The economic development of St.Petersburg is inseparably connected to its location on the Neva River and the Finnish Gulf.

2. Without optimal development of the physical infrastructure of the river, the waterways in the city, the sea front and the harbours, the economic development will be seriously hampered, and moreover, present and future investments will prove to be in vain.

3. The City of St.Petersburg is prone to frequent flooding, inundating up to 30% of the city. In these areas some of the most valuable infrastructure and economic activities are located or will be developed in the near future. Since its foundation more than 200 floods have occurred in St.Petersburg. The storm surge barrier, designed to safeguard the City against these floods should be completed forthwith. This is necessary, not only from the point of view of safety but also to prevent the presently unprotected dam to slide into the Morskoj Kanal (only 16m deep) with the first serious storm surge situation. This would result in blocking of the entrance to the ports of St.Petersburg for an extended period.

4. The environmental situation of Lake Ladoga, the Neva River and the Neva Bay has been deteriorating for many years, resulting in violation of most existing water quality standards. During the last few years this deterioration has stopped, but this is only due to the fact that industrial production has decreased dramatically. Without proper and pro-active environmental policy and measures, any positive economic development will result in an increase of these problems. The 1994 City's environmental spending in the public sphere is only 0.2% of the annual budget. This is only 10% from what is on average spent in the West, whereas the problems are much worse. As a result, the environmental conditions of the City and the surface waters surrounding it, pose a serious threat to the health situation and to the development of economic sectors that depend on clear and healthy water (tourism, recreation, fisheries).

In the following paragraph the economic dimensions connected to the waters around St.Petersburg will be worked out, in terms of **potential damage due to the present situation**, and **potential gains** to be reached if a rational planning using Integrated Water management principles will be adopted in the decision making process for planning and investments.

2. The principles of integrated water management

2.1 IWM in general

In the Netherlands the principles of integrated water management have been introduced after completion of large infrastructural works in 1985. The integrated approach is directed to harmonize the desired functions in relation to the potentials of the water system and has been very successful in restoring existing and/or create new water related resources in various water systems in the Netherlands. This approach stands in contrast with the practices from the past where maximization of single sectorial use (navigation, energy production, water production, waste emission etc.) rather than optimization were the keywords of the management of water bodies.

Key principles of integrated water management are:
- protection of the safety of the land and of vital economic interests;
- protection and enhancement of environmental values and contribution to socio-economic welfare and public health;
- an integrated approach, considering the inter-relationship between air, water, soil and biological resources and the interdependence with economic activities;
- promotion of a mix of actions in the public and private sectors, increasing safety and efficiency, and reducing the cost of environmental protection;
- coordination of water manager(s) at the different authority levels, research institutes, interest groups, etc;
- financing of water management from a system of levies in which each person or enterprise (including public bodies) contribute relative to their impact on the water systems in their area;
- democratic control on the expenditures in water management from those who pay the levie.

The main lessons learned from a decade of experience with integrated water management in the Netherlands can be summarized as follows:
- the land can be protected against flooding from the sea or from rivers in an environmentally sustainable way;
- effective measures to reduce pollution inputs from point sources can be taken,
- a combined strategy of input reduction and flushing can stimulate the restoration of highly eutrophic lakes and estuaries,
- infrastructural works like dams, weirs and sluices enable a controlled mixing between water bodies and allows the management of separate water systems with different functions to be fulfilled, including the creation of new opportunities for nature development,
- in net sedimentation areas the long-term accumulation of pollutants in the sediments might prevent the restoration of the ecological values after reduction of pollution inputs. Future costly measures such as environmental dredging should be considered relative to possible actions now at the sources of pollution.
- the system of levies and democratic control guarantees efficient and (cost)effective management.

Similarities between water systems in the Netherlands with the LNG-water system in the field

of e.g. water pollution, ecology, flood protection, harbour development, industrialisation, illustrate the mutual problems and need for actions. It is deemed absolutely essential that the local infrastructure to provide the necessary policy support and integrated managerial skills will be developed with the help of input from the Netherlands and other countries with relevant experience in this field.

2.2 IWM applied to St.Petersburg

St.Petersburg is situated at the mouth of the Neva, where the river enters into the Gulf of Finland. Similar to other coastal areas in the world, the ecological values and aquatic economic resources have been negatively influenced due to ongoing urbanization, industrialization and infrastructural developments.

A recent report by the Finnish Government, prepared in cooperation with institutes from the St.Petersburg region, identifies the Gulf as one of the most polluted areas in the Baltic Sea, and the city of St.Petersburg as the biggest point-source loader of the Gulf. Also the Ladoga Lake area is known for its large contribution to the upstream loading. The biggest problems of waste management are related to the management of municipal and industrial solid wastes, hazardous wastes, waste water sludge and livestock farming wastes.

In very general terms, the priorities for different water pollution projects have been pointed out in the report as follows:

1. implementation of the phosphorus (nutrient) removal at waste water treatment plants of the city of St.Petersburg;
2. connection of the direct discharging sewers to the collectors of the treatment plant of St.Petersburg;
3. construction of suburban waste water treatment plants in St.Petersburg.

The implementation of integrated clean technologies and 'end-of-pipe' clean-up techniques for the industrial sector (including the military complex) should be added to these priorities.

These general policy objectives underline the concern in the St.Petersburg region for the environmental degradation of the Ladoga-Neva-Gulf (LNG) water system and underline the need for action.

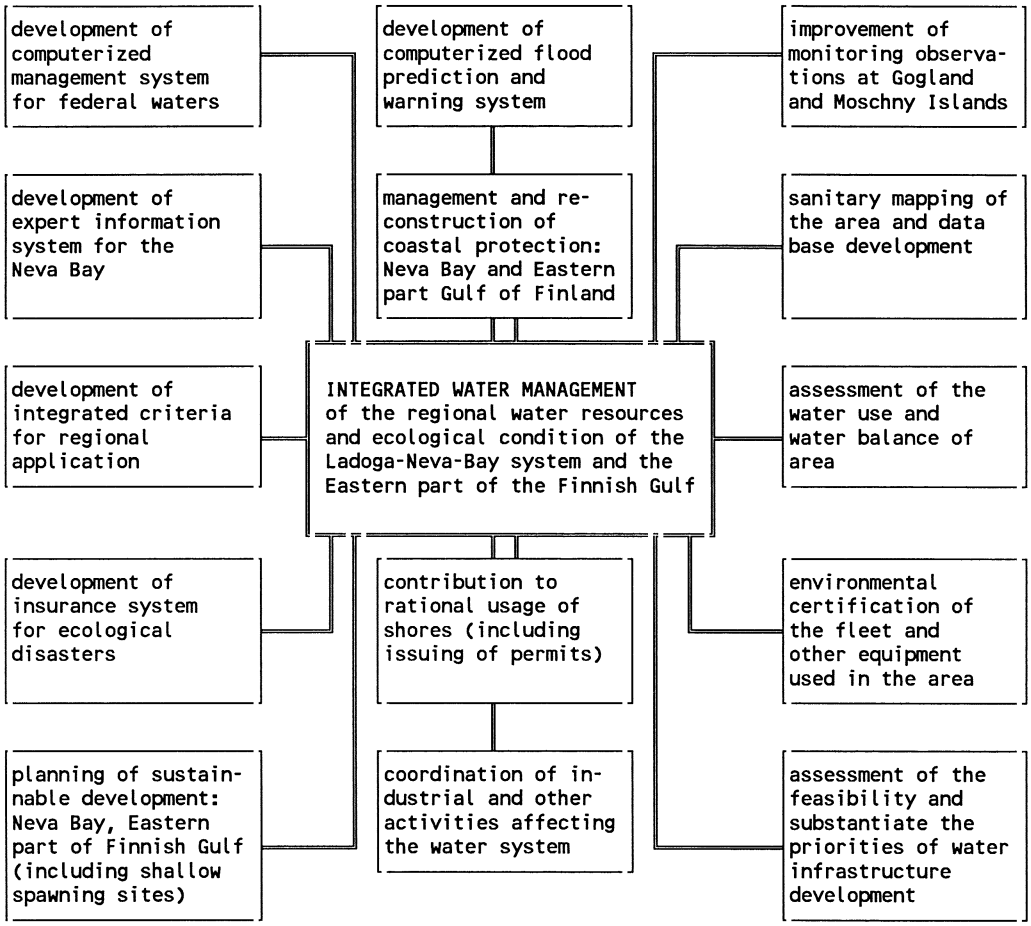
In 1992 a joint Russian-Netherlands protocol was signed in which the Russian Federal and Regional authorities stated to adopt the principles of Integrated Water Management for the future policy development for the LNG water system. The main reasons and objectives for the introduction of the principles and methodology of IWM for the LNG-watersystem are:

- achieving the sustainable use and development of the LNG natural resources
- harmonizing desired functions in relation to the carrying capacity of the water system

and moreover,

- formulation of a strategy for environmental and ecological developments in the St.Petersburg region to be imbedded in social and economic development plans and environmental action and investment plans.

During the recent meeting in March of the Russian-Netherlands working group in St.Petersburg the following main task have been identified for the operational phase of IWM in the region:



3. The tasks of the new Unit for IWM in St.Petersburg

During the recent meeting in March of the Russian-Netherlands working group in St.Petersburg, already mentioned before, a decision has been made by the Mayor to set up a unit within the City of St.Petersburg that will be responsible for the planning and implementation of IWM in the LNG area.

The operational and planning tasks of the unit are connected to the following fields of operation:

1. design and (re)construction of the flood barrier, the orbital highway, harbours, and other (hydro)technological objects in the LNG system, within the administrative borders of St.Petersburg;
2. protection of the coast of Neva Bay and the Eastern part of the Finnish Gulf against damages, their reconstruction and transformation into profitable recreation zones;
3. the re-evaluation of coastal dumping of sediments;
4. planning and implementation of sustainable development projects in the Neva Bay (including shallow water spawning sites);
5. develop and implement an infrastructure for maintenance, research and development in the LNG system within the administrative borders of St.Petersburg;
6. the objects of the City Government on the Black Sea coast of the Crimea;
7. coordination of economic activities affected by or dependant on the LNG watersystem;
8. operation of the flood barrier and other relevant hydrotechnical and geodynamical objects.

The unit will in effect be responsible for all environmental impact assessment and optimal planning of proposed economic activities in view of possible adverse effects on the environmental status of the **surface waters** within the administrative borders of St.Petersburg.

4. Economic dimensions connected to the waters of St.Petersburg

4.1 the framework

The project for Integrated Water Management in the St. Petersburg Region is based on a number of socio-economic, environmental and other triggers from the present situation and investments that are foreseen for the future. First of all, these will be put into an overall framework. After that some of the most important economic estimates will be worked out in more detail as examples.

Economic triggers

Economic costs and damage as a result of inadequate water management:
- damage due to flooding of public and private property;
- damage due to pollution;
- costs related to need for environmental dredging (cleaning of polluted sediments);
- costs for unnecessary maintenance dredging;
- damage due to blocking of the navigation route (dam collapse, unnecessary closure of the gates).

Investment projects with potential cost recovery from the private sector
- extension of harbour facilities and increased handling and transport capacity;
- sanitation of serious industrial polluters by introducing new clean process technologies;
- road construction on the dam site and connection to the Ring Road;
- road connections to the Ring Road and associated business areas;
- upgrading of drinking water treatment and supply;
- development of recreational areas;
- oil sweeping in case of serious oil spills (recovery from polluter).

Investment projects with potential cost recovery from the public sector
- completion of the dam (financed by St Petersburg + Federal money);
- upgrading of waste water collection, treatment and outfall design/location;
- private enterprises connected to operational management in case of alarm situations (accidental pollution, flood periods).

Ecological triggers
- ongoing deterioration of the ecological state and natural resources of the Neva system;
- eutrophication due to increase of nutrients from the Ladoga region (land based activities);
- loss of species diversity;
- restoration of lost wetlands and new wetland developments.

Public Health triggers

- poor quality of raw water intake for drinking water and industrial water production of Krohnstadt;
- health hazards (also hampering recreation) due to high bacteriological pollution connected to insufficient or outdated sewerage systems and insufficient municipal waste water treatment;
- bad fish quality (pollution due to toxic substances).

International triggers

- Russian commitment to the conventions for the Baltic Sea and other international environmental conventions.

Institutional triggers

- presently no multidisciplinary facility exists for the integrated assessment of water management measures and the optimization of investments in this sector from the point of view of all relevant disciplines, managerial aspects and economic interests involved;
- there is a clear need for joint cooperation between various institutes and practical use of specialized knowledge in an integrated framework, but no practical and operational platform for this exists;
- there is a need for practical tools and instruments to analyze the behaviour of the water system and the impact of uncontrolled developments and managerial actions (including monitoring, databases, modelling, facilities for presentation of results).

Social triggers

- employment;
- general wellbeing of the population.

4.2 Quantification of the present main economic interests

Damage due to flooding

It is difficult to assess the overall damage to the City and to the economy if a major flooding would occur. Not even counting the personal hardship that would be incurred upon the people of St.Petersburg, some elements in the equation are: 1) physical damage to, roads, structures and buildings, 2) loss of income due to obstruction of transport routes, 3) the negative effects on the attractiveness of the City to potential investors. Some approximations can be made:

1. damage to the coffer-dam at the entrance to the Morskoj Kanal.

2. dredging of between 600.000 and 1.600.000 m^3 of eroded material from the Morskoj Kanal costing between 3 and 8 million ECU (price level March 1994). This will take about 6 months to complete.

3. blocking of almost all navigation in the Morskoj Kanal during 6 months, resulting in:
   - loss of income tot the harbour itself (about 1.5 million ECU)
   - loss of income to all sectors depending on import/export through the harbour (production decrease, imposed contract fines, prospects lost, image lost etc.)

   The macro economic immediate effect of missing a substantial part of the industries productivity during 6 months, may be related to the overall gross municipal and regional product figure.

4. Damage to property in the City and suburbs along the shores of the Neva Bay. This will depend very much on the water levels. The estimated maximum can be calculated from analysis of isolines of inundation related to buildings in the City (up to 30% of the total area). Clean up measures and restoration to the structures and the interior of buildings and machinery in industry will have to be taken into account. Also there will be damage to the public infrastructure (roads, sewerage systems, water mains, electricity network, telecommunication etc. etc.). A recent inundation of 100 km^2 in the South of The Netherlands (along the river Meuse, December 1993) resulted in a total **physical** damage of approximately:
   - 20 million ECU for private houses;
   - 50 million ECU for private businesses.

Moreover, presently new investments projects are being proposed, inter alia to the EBRD, that are related to the development of the port area and other water related infrastructure. The total figure of proposed investments will be in order of 100 million ECU. When these investments will be made, this would increase some of the figures above considerably.

Economic damage due to pollution

Again, it is hard to assess pollution damage in monetary or economic terms. One estimate can be related to the potential for recreation with pleasure boats in the Neva Bay area. This recreation sector exists presently, but may be growing considerably if the water quality of the Bay and the overall economic prosperity of the area will improve.

Comparing the Neva Bay area to the Lake IJssel district in the Netherlands, which has many similar features, this would lead to the following estimated potential:
- 10 harbours for 200 ships each;
- tourist tax income related to overnight visits: 12.000 ECU/year;
- harbour income from rents for ships: 45.000 ECU/year;
- yacht building sector for the regional market: 1.9 million ECU/year.

Apart from this, beach tourism and holiday resorts may be developed on the shores of the Bay may be established. Also it may be considered if the area is suitable for aquaculture development (fish and shellfish). This sector of course would depend very much on clear, healthy waters in the Bay.

Proposed investements

Presently a list is being evaluated by the Mayors Office of proposed investements in St.Petersburg, including a number of projects with relevant relationship to the environmental state of the LNG system. These projects may be put before the board meeting of the EBRD in April 1994.

[*it is proposed to include this list here, with the relevant investment figures*].

From the length and content of the list it becomes very clear that large investment are being considered, wether financed by investment banks like the EBRD or not. From the point of view of consistancy in the evaluation of environmental impacts and from the point of view of optimal planning of emission levels and outfall locations, it should be clear that an integrated approach and integrated set of instruments should be developed and be applied for this by the planning offices of the city of St.Petersburg and the surrounding authorities.

5. Technical workplan

Project area

The project area to be considered within the framework of integrated water management in the St.Petersburg region basically consists of the outlet of Ladoga Lake into the Neva river, the river itself including the Neva delta, the Neva Bay and eastern part of the Gulf of Finland. All discharging activities in the direct catchment area to the Neva river and Neva Bay and their tributaries will be included as well.

Although the Ladoga Lake and the catchment area will not be included in the first stage of the project, the results from ongoing projects will be used as an input to this project.
Downstream the project area is bounded by the Gulf of Finland and Baltic proper.
For real-time water level predictions as a basis for flood warning and protection, there is a need to consider the whole Gulf of Finland, The Botnic Gulf and a large part of the Baltic proper. In the first stage of the project the result of ongoing projects will be used for this purpose.

In later stages the area might extended both to include the fore-mentioned area both at the upstream and downstream side of the Neva-water system

Project aims

The aim of the project is to achieve a sustainable use and development of the Ladoga-Neva-Gulf water system and to harmonize desired functions in relation to the carrying capacity of the water system.

To achieve this goal an integral approach will be used for monitoring, analysis and assessment of the water system and its functions which will allow to formulate and set priorities for a balanced and founded management and development of the water related activities.

Special attention will be given to actions needed for the improvement of ecological conditions in the Neva river and Neva Bay and to avoid a further deterioration.

The products resulting from the proposed project can be specified as follows:
1. Strengthening of an organisational unit for integrated water management in the St.Petersburg region, which is responsible for management of the water system with respect to both water quantity, water quality and ecology;
2. Stimulation of institutional cooperation to exchange data and information on the condition and behaviour of the water system and its functions;
3. Development of a management oriented computer system for water system analysis which enables the environmental assessment of new or reconstructed activities in the region and which enables the quantification of ecological benefits of individual and/or combined measures for improvement of the ecological conditions in the region.

4. Drafting of a management action plan to improve and safeguards the ecological values of the Neva water system and which defines the needs for investments projects such as waste water treatment, relocation of waste water outfalls, implementation of clean industrial technologies and rules for operation of gates and sluices to prevent flooding and/or to safeguard recreational areas from pollution with insufficiently treated waste water. In this plan also the ecological assessment of expected socio economic developments should be quantified using predictive tools within the management oriented computer system as mentioned under 3.
5. Carrying out of studies for environmental impact assessment (EIA) of projected new and or relocated waste water discharges in the region, constructions works such as redesign of harbours, dredging and disposal of polluted sediments etc. During the visit of the Netherlands delegation to St.Petersburg (March 28- April 2, 1994) it was identified that a new sewage outfall is under construction in the stagnant zone in the southern part of Neva Bay near the breakwater of the Morskoi Canal. Both its location and the planning for temporarily discharge of untreated sewage highly conflicts with the needs for water management which is directed to balance economic use and ecological safeguarding of the water system.

Technical approach

To achieve the goals as mentioned above the development of a computerized management oriented database and modelling system for evaluation, assessment and prediction of the hydrological, chemical and biological properties of the Neva water system forms an essential step.

The main components of such a system consist of:
- databases and GIS (geografic information system) for existing data on properties for water constituents, sediments and biota, for water users (e.g waste water input from domestic, industrial and agricultural activities) and for boundary conditions (such as meteorology).
- a waste load model to quantify net input of pollution inputs to the system taken into account existing information on point and non-point sources of pollution, the rate of treatment and or properties of land use, runoff etc.
- a set of predictive models for hydrological, water quality and ecological conditions. The modelling system should enable the prediction of water levels and currents for various conditions, the related transport of pollutants, the influence of other physical, (bio)chemical and biological processes and the resulting properties of constituents for both water, sediments and biota,
- a data base for assessment of the water quality and ecological conditions using legal standards and/or eco-toxicological criteria based on dose effect relations,
- software for pre- and postprocessing using GIS-based techniques in relation to user-friendly interfaces to enable a management oriented presentation of findings.

In addition to the computerized system supporting activities such as in situ monitoring of hydrological, chemical and biological properties are essential to feed the models and compare their results with in situ observations.

In this respect the use of remote sensing information will be very useful for model validation and or additional information on spatial distributions sediments, phytoplankton etc.

With the management oriented computer system it shall be possible to analyze and predict the hydrological conditions of the Neva water system in terms of water levels and currents under changing meteorological conditions and operations of gates and sluices by the St.Petersburg flood protection barrier. For this purpose existing hydrodynamic models as developed and applied by russian experts (Klevanny et al) will be used.

The results of the hydrodynamic model shall be used as a basis for transport of constituents in the water quality and ecological model for the water system. This model enable the evaluation of water quality and ecological changes under different hydrological conditions and waste load situations. The constituents that should be considered by the model includes the following items:
- salinity , suspended solids
- pathogenic bacteria (coliform, e-coli)
- nutrient (N, P, Si) and phytoplankton
- oxygen demanding substances (BOD, COD) and dissolved oxygen
- heavy metals (Cu, Cd, Zn, ..)
- organic micro-pollutants (PCB, PAH)

For the water quality and ecological modelling system, DELWAQ, the system as developed in the Netherlands will be used as a basis. This model has been applied to a wide range of water system both in the Netherlands, the North Sea and various water systems in the world (e.g. Adriatic, Mediterranean, Gulf of Gdanks, Black Sea, Sea of Azov, Hangzhou Bay (China), Gulf of Thailand).

For the assessment of the impact of pollution on the foodweb, models for bioaccumulation and exposure of organisms will be applied in addition to the comparison with legal standards for surface water.

6. Tasks, phasing, budget

Summary of activities

1. Institutional strengthening of a unit for integrated water management

As a part of the institutional strengthening, a group ca. 3-5 russian experts, responsible for the implementation of integrated water management in the St.Petersburg region from a managerial point of view, will be invited to come to the Netherlands and work together with Netherlands colleagues on procedures and tools for water management. They will work in the Netherlands for ca. 1 month at both the institute for inland water management and waste water treatment (RIZA) and the institute for coastal water systems (RIKZ) of the Ministry of Transport and Water Management, Rijkswaterstaat. In addition they will be introduced into the system of regional management, the responsibilities of regional water authorities, consultants and other ministries such as the ministry of Environment.
In addition Netherlands experts will visit St.Petersburg to advise in the organisational and institutional setting of the unit for integrated water management in St.Petersburg, the related tasks and responsibilities.

The work-breakdown for these activities includes:
2 man-months by Netherlands experts and
4 man-months by Russian experts

2. Data-gathering, -processing and - evaluation on properties of both the water system and related water use

An essential part in water management is the access to various data on the water system and its users functions. Existing data bases with monitoring data will be analyzed and updated. Existing data on the user functions will also be reviewed. Both kinds of data will be brought together in a newly build GIS-based data base.
Present monitoring methods will be reviewed. Additional monitoring will be carried out to validate the already existing information and or to fill gaps in the knowledge on the actual state of the water system.
Filtering techniques will be implemented to improve on the existing data.
Remote sensing data from satellites (NOAA, SPOT, ERS-I and SeaWIFS) will be obtained and processed.
New methods will be introduced to improve the accuracy of monitoring for both hydrological, water quality and ecological properties (e.g. GPS, radar methods for current measurements)

The work-breakdown for these activities includes:

4 man-months by Netherlands experts and
14 man-months by Russian experts

3. Development of a management oriented computer system for the Ladoga-Neva-Gulf system

To set up a management oriented computer system for integrated water management of the LNG water system existing databases and modelling techniques will be used as much as possible.
For this purposes existing software such as databases and hydrodynamic models as developed and applied by russian experts will be merged with Netherlands software as developed and used by Delft Hydraulics and Rijkswaterstaat to study the water quality and ecological conditions for inland and coastal water systems.
The work-breakdown for these activities includes:

- for the database and GIS based system;
  4 man-months by Netherlands experts and
  3 man-months by Russian experts

- for the waste-load model for both point and non-point sources
  2 man-months by Netherlands experts and
  2 man-months by Russian experts

- for the integrated modelling system for hydrology, water quality, sediments and ecology;
  10 man-months by Netherlands experts and
  5 man-months by Russian experts

- for the assessment methods on ecological conditions in relation to economical parameters;
  5 man-months by Netherlands experts and
  2 man-months by Russian experts

- for implementation and development of user-friendly interfaces and GIS-orientated presentation techniques;
  5 man-months by Netherlands experts and
  2 man-months by Russian experts

4. Development of an action plan for water management and investment projects necessary to safeguard the ecological conditions and users functions of the LNG water system

This activity includes the drafting of an action plan for the St. Petersburg Region in which necessary managerial actions are identified and evaluated using the management oriented computer system. In this plan the planned socio-economic developments for the region will be taken into account, while measures will be identified to improve the ecological condition of the LNG water system.
In view of the operation of the gate and sluice of the St.Petersburg flood protection barrier a set of operation rules will be specified for different situations. These situations

will include both normal operational conditions and alarming situations in case of flooding and accidental spills of harmful pollutants.

The work-breakdown for these activities includes:

5 man-months by Netherlands experts and
5 man-months by Russian experts

5. Case study on Environmental Impact Assessment

These activities includes a case study to show how the management oriented computer system can be used to quantify the ecological impact of new construction works and or investment projects (eg. the new sewage outfall for the south of St.Petersburg) on the LNG water system and its water use.

The work-breakdown for these activities includes:

2 man-months by Netherlands experts and
2 man-months by Russian experts

6. Equipment

The following equipment will be necessary:

computer hardware
computer software
equipment for improved monitoring
remote sensing images

Project phasing

It is envisaged that the total project period will cover 2-3 years

Financing

Based on the above-mentioned work-breakdown the following budgets for personnel cost is identified,

1. Institutional strengthening	40.000,-	ECU
2. Data-gathering and- processing	95.000,-	ECU
3. management oriented computer system	420.000,-	ECU
4. action plan	90.000,-	ECU
5. case study ecological impact assessment	35.000,-	ECU

personnel cost	680.000,-	ECU
equipment	100.000,-	ECU
travelling and lodging	120.000,-	ECU
contingencies	50.000,-	ECU
total	950.000,-	ECU

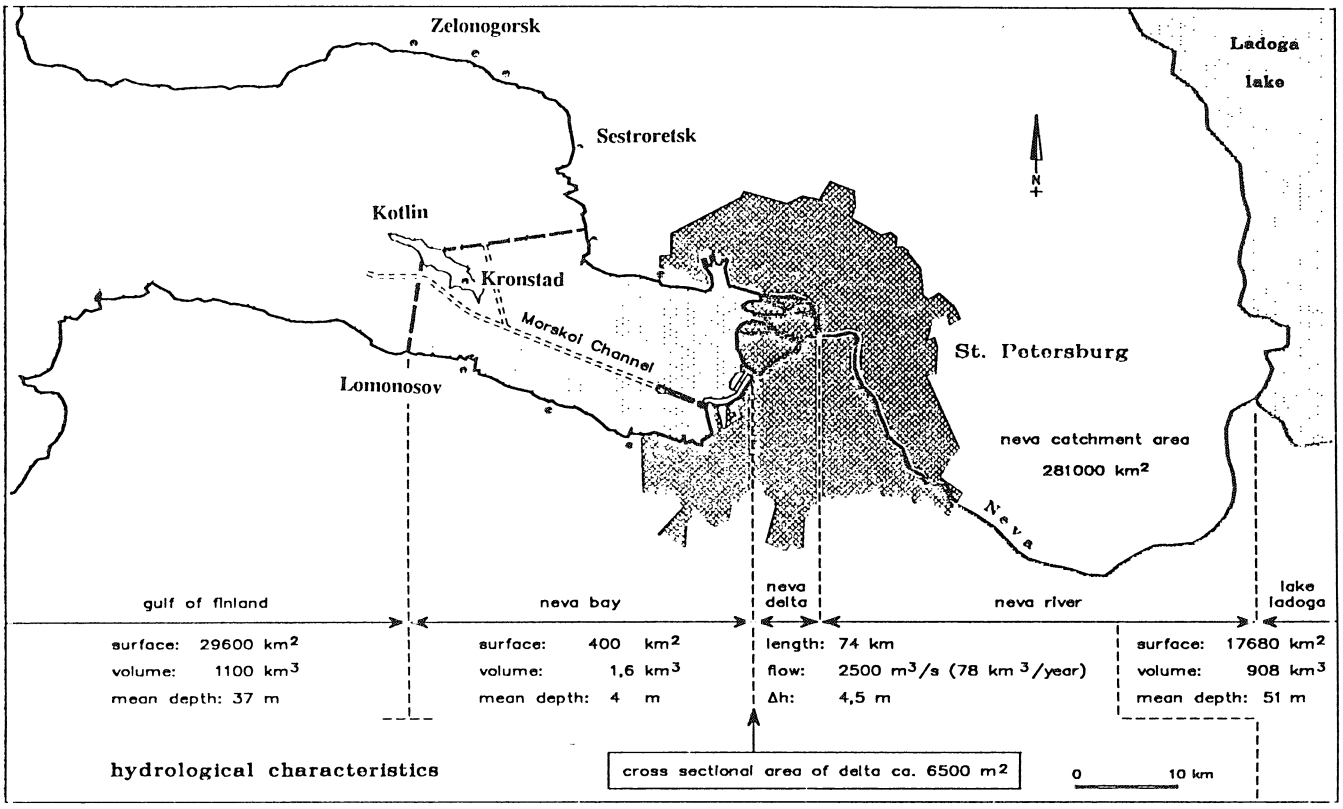
Annex F copies of sheets prepared for the presentation of the project to the EBRD at the EBRD Board meeting April 1994

Integrated Water Management St.Petersburg

sheets prepared for 3rd annual meeting of EBRD

april 1994

Integrated Water Management St. Petersburg situation



Integrated Water Management in the St.Petersburg Region

Motto: Safe and sustainable development of St.Petersburg and Leningrad Oblast

facts:

- St.Petersburg is situated in a unique position on the mouth of the Neva River, facing the Gulf of Finland. The population of City and Oblast is presently 7.5 million people.
- since its founding, St.Petersburg has been (partly) flooded more than 200 times.
- all harbour and industrial activities in the past have been developed within the old city.
- the sewerage system and municipal waste water treatment is still not optimal (60% is treated, efficiency is low).
- little has been done in the past to reduce pollutant emissions to the water from industry.

facts:

- consequently, international environmental water quality standards for bacteriological quality, for oxygen consuming substances and for micro pollutants are still not met in the river and in Neva Bay.

St.Petersburg policy:

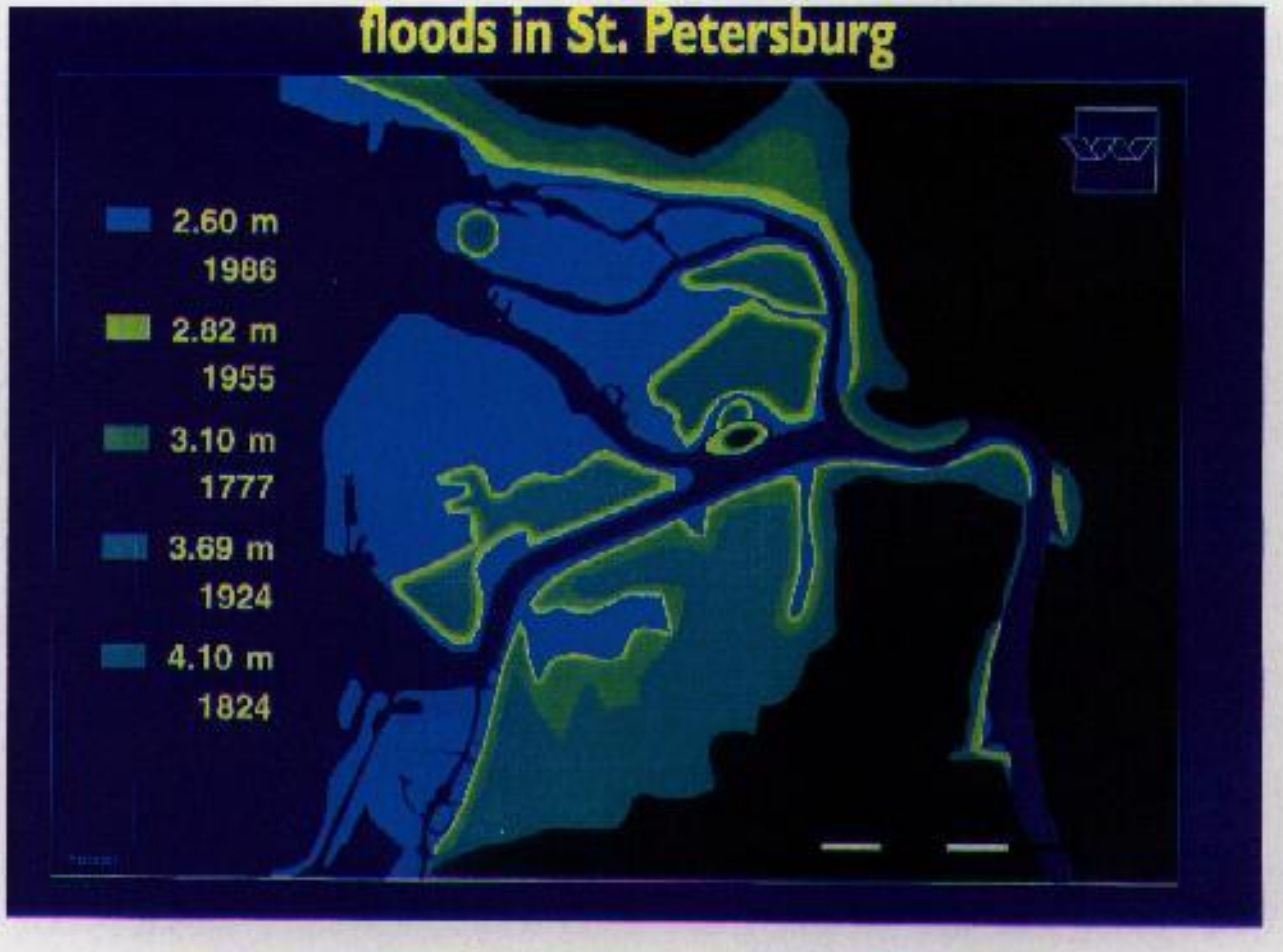
- the St.Petersburg water system is ONE system and should be managed as ONE in all its physical, chemical and ecological aspects.
- the flood protection barrier should be completed to protect the city, the infrastructure and future investments.
- the environmental condition of the waters surrounding St.Petersburg should be improved.
- scientific evidence and international expert opinion show that the completion of the storm surge barrier will have no negative effect on the water quality of the Neva Bay.

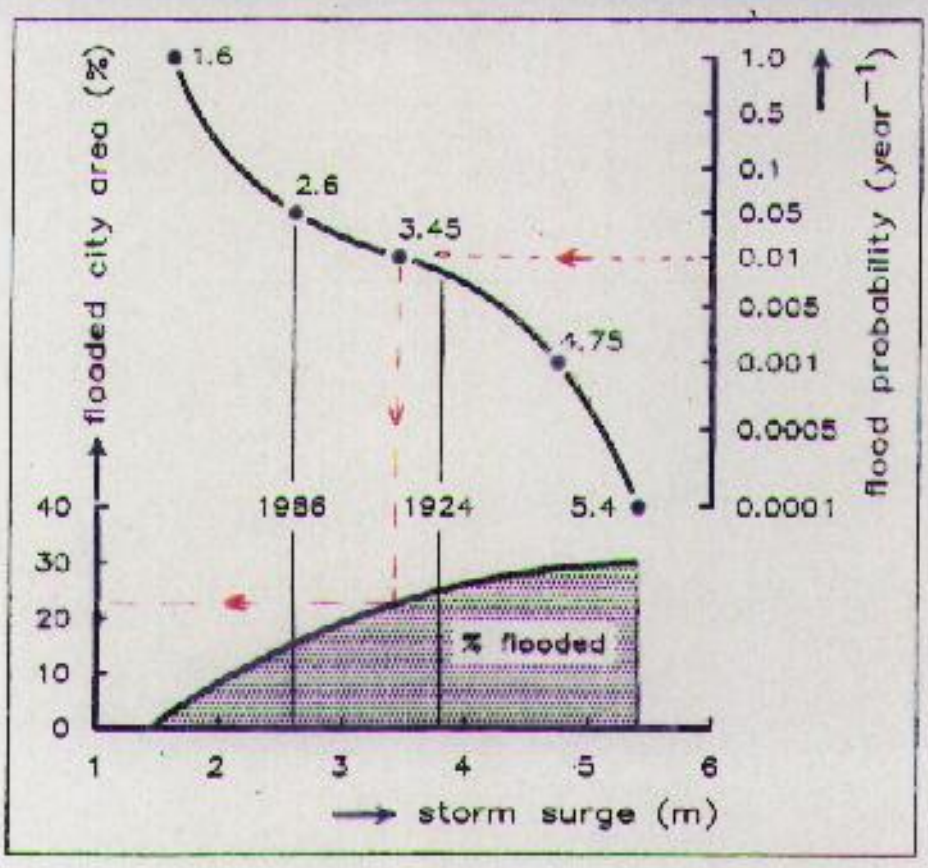
St.Petersburg policy:

- water quality standards will be developed in the framework of an integrated masterplan for water management.
- a special organization will be established within the municipal government, which will be responsible for the evaluation and planning of the development and operation of the infrastructure of the sea front and harbour and all environmental aspects of the St.Petersburg water system.

possible developments in the St.Petersburg region:

- construction of an orbital highway, including the Western route over the storm surge barrier and the Island of Kotlin.
- new harbour developments outside the old city, but protected from flooding and well connected to road and railway transportation.
- reconstruction and reallocation of industrial activities outside the old city.
- planning and execution of an intensified programme for upgrading of the sewerage system and municipal waste water treatment.


floods in St. Petersburg
2.60 m
1986
2.82 m
1955
3.10 m
1777
3.69 m
1924
4.10 m
1824

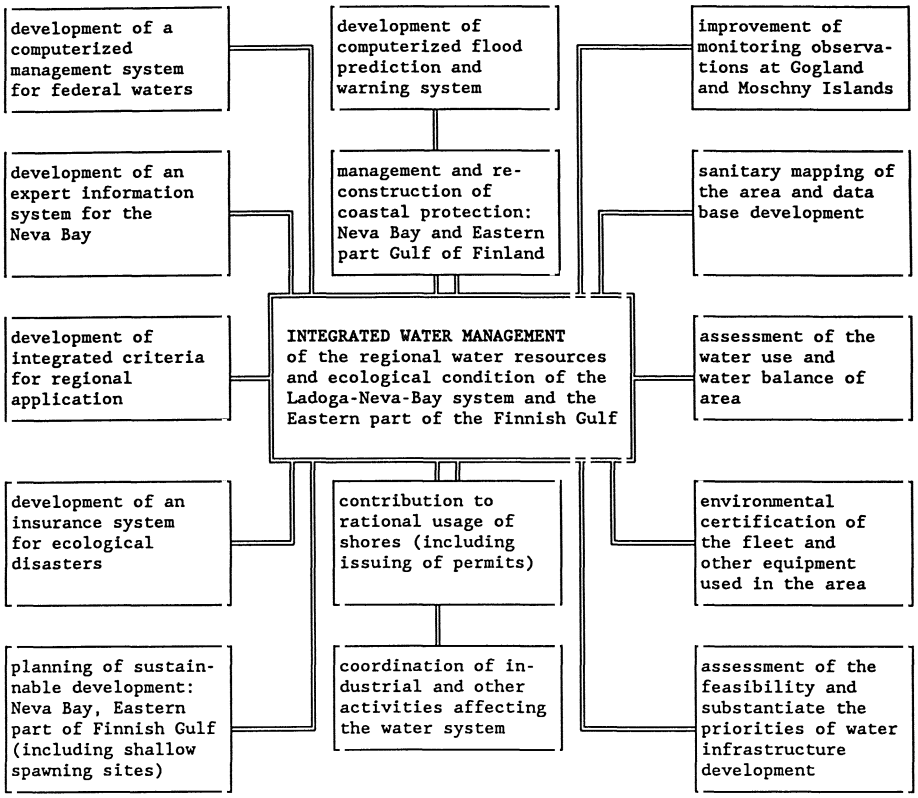

flooded city area (%)
1.6
2.6
3.45
4.75
5.4
1986
1924
40
30
20
10
0
% flooded
1
2
3
4
5
6
storm surge (m)
1.0
0.5
0.1
0.05
0.01
0.005
0.001
0.0005
0.0001
flood probability (year⁻¹)

St.Petersburg requests:

Financial, technical and managerial support from the EBRD in setting up the specialized organization for Integrated Water Management for the St.Petersburg Region

Project aims:

1. strengthening of the municipal structures for integrated water management.
2. promoting cooperation between engineering and environmental disciplines and structures within the City Government responsible for economy and planning.
3. development of a management oriented computer system for technical, ecological and economic assessment of proposed measures and investments.
4. drafting of a management action plan.
5. carry out environmental impact assessments for proposed investments (waste water treatment, harbour development, new industry locations etc.).



Project organization and costs:

The project should be carried out in cooperation with specialists from Western European countries with similar problems. Between the Netherlands and St.Petersburg already exists a cooperation in the framework of a Memorandum of Understanding on water management problems

The project duration will be 2-3 years.

Project costs are estimated to be approximately 950.000 ECU

Название:

Интегрирование управление водными ресурсами в системе "Ладога-Нева-Финсий Залив"

Девиз:

Безопасное и устойчивое развитие Санкт-Петербурга и Ленинградской Области

Факты: А

- Санкт-Петербург расположен в устье Реки Невы на берегу Финского Залива. Население города и области составляет 7½ млн.чел.

- Со времени основания Санкт-Петербурга (частично) затоплялся более 200 раз.

- В прошлом вся портовая и промышления деятельность была сосредоточена в старом городе.

Факты: Б

- Система канализации и очистки бытовых вод до сих пор не оптимальна (60% очищается, эффективность низкая).

- В прошлом мало что делалось для снижения поступления промышленных загрязняющих веществ в воду.

- Как следствие, международные экологические стандарты по воде: бактериологическое качество, кислородопотребляющие вещества и микрозагрязнители, - в водах реки Невской Губы не соблюдаются.

лист 2б

Политика Санкт-Петербурга: А

- водная система "Ладога-Нева-Залив" - это единая система, и ею следует управлять как единой системой во всех физических, химических, экологических и экономических аспектах.

- сооружения защиты города от наводнений должны быть достроены, чтобы защитить город, его инфраструктуру и будущие капиталовложения.

- экологическое состояние вод, окружающих Санкт-Петербург, должно быть улучшено.

лист 3а

Политика Санкт-петербурга: Б

- по мнению ученых и международных экспертов, завершение строительства дамбы не будет иметь отрицательного влияния на качество воды в Невской Губе.

- В рамках интегрированного генерального плана управления водными ресурсами будут выработаны стандарты качества воды.

- В составе правительства города будет образована специальная организация, ответственная за оценку и планирование развития и эксплуатацию инфраструктуры морской зоны и порта и за все экологические аспекты "Ладога-Нева-Залив".

Возможные новые объекты в регионе Санкт-Петербурга:

- строительство кольцевой автодороги, включая западную часть, проходящую по дамбе и острову Котлин.
- новые портовые сооружения вне старого города, по защищенные от наводнений и хорошо связанные с автомобильными и железными дорогами.
- реконструкция и перенос промышленных объектов из старого города.
- планирование и осуществление интенсивной программы улучшения системы канализации и очистки бытовых сточных вод.

Санкт-Петербург запрашивает:

Финансовую, техническую и организационную поддержку EBRD при создании специализированной организации для интегрированного управления водными ресурсами системы "Ладога-Нева-Залив"

Цели проекта:

1. Усиление городских структур интегрального управления водными ресурсами.
2. Обеспечение взаимодействия между инженерными и экологическими исследованиями и структурами в правительстве города, ответственными за экономику и планирование.
3. создание управленческой компьютерной системы для технических, экологических и экономических оценок предлагаемых решений и капиталовложений.
4. составление проекта плана управления.
5. проведение оценок влияния на окружающую среду от предлагаемых капиталовложений (очистка сточных вод, развитие портов, новое расположение промышленных объектов и.т.д)

Организация и стоимость проекта

Проект должен выполняться совместно со специалистами из западноевропейских стран со сходными проблемами. Между Нидерландами и Санкт-Петербургом уже существует сотрудничество в рамках меморандума о взаимопонимании по проблемам управления водными ресурсами.

Продолжительность проекта 2-3 года

Ориентировочная стоимость проекта 950.000 ЭКЮ

ТИТУЛЬНЫЙ ЛИСТ

НАЗВАНИЕ ПРОЕКТА :	"ИНТЕГРИРОВАННОЕ УПРАВЛЕНИЕ ВОДНЫМИ РЕСУРСАМИ САНКТ-ПЕТЕРБУРГСКОГО РЕГИОНА".
ЗАКАЗЧИК ПРОЕКТА :	УПРАВЛЕНИЕ "ДАМБОЗАЩИТА" МЭРИИ САНКТ -ПЕТЕРБУРГА.
	КОНТАКТНЫЙ ТЕЛЕФОН: (812) 312-25-29
	ФАКС: (812) 312-40-27
	Телетайп: 122562 "Ворот".
РОССИЙСКИЕ УЧАСТНИКИ ПРОЕКТА:	УЧЕНЫЕ И СПЕЦИАЛИСТЫ САНКТ-ПЕТЕРБУРГСКИХ ТЕХНИЧЕСКОГО УНИВЕСИТЕТА, АРХИТЕКТУРНО-СТРОИТЕЛЬНОГО УНИВЕРСИТЕТА, ОКЕАНОГРАФИЧЕСКОГО ИНСТИТУТА, АО "ВНИИГ ИМ. Б.Е.ВЕДЕНЕЕВА"И ИНСТИТУТОВ РОССИЙСКОЙ АКАДЕМИИ НАУК.
ЗАПАДНЫЕ УЧАСТНИКИ ПРОЕКТА:	УЧЕНЫЕ И СПЕЦИАЛИСТЫ НИДЕРЛАНДСКИХ НАУЧНО-ИССЛЕДОВАТЕЛЬСКОГО ЦЕНТРА " ДЕЛЬФТ ГИДРАУЛИКС", ИНСТИТУТА УПРАВЛЕНИЯ ВНУТРЕННИМИ ВОДАМИ И ОЧИСТКИ ВОДЫ (РИЗА) И ИНСТИТУТА ПРИБРЕЖНЫХ ВОДНЫХ СИСТЕМ (РИКЗ). МОГУТ БЫТЬ ПРИВЛЕЧЕНЫ СПЕЦИАЛИСТЫ И ИЗ ДРУГИХ ЗАПАДНОЕВРОПЕЙСКИХ СТРАН СО СХОДНЫМИ ПРОБЛЕМАМИ.

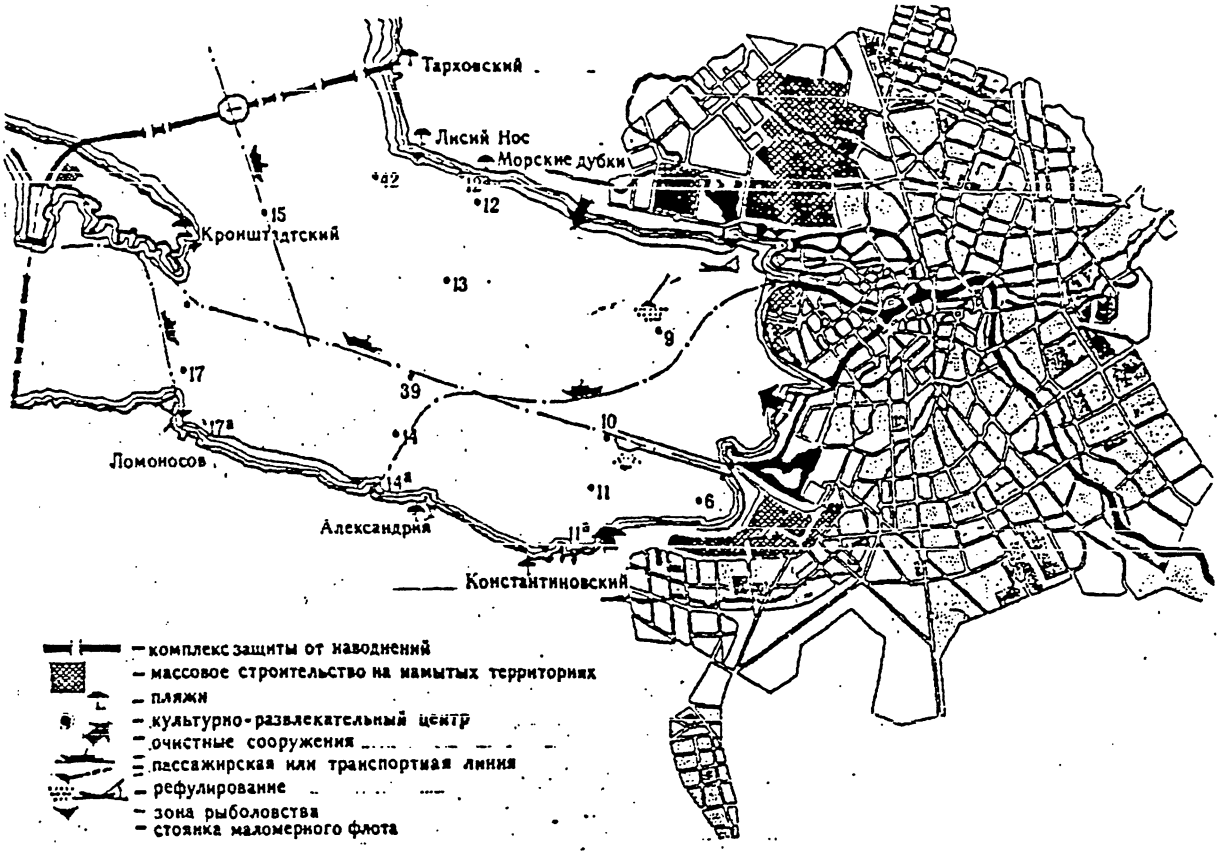
ЛИСТ I

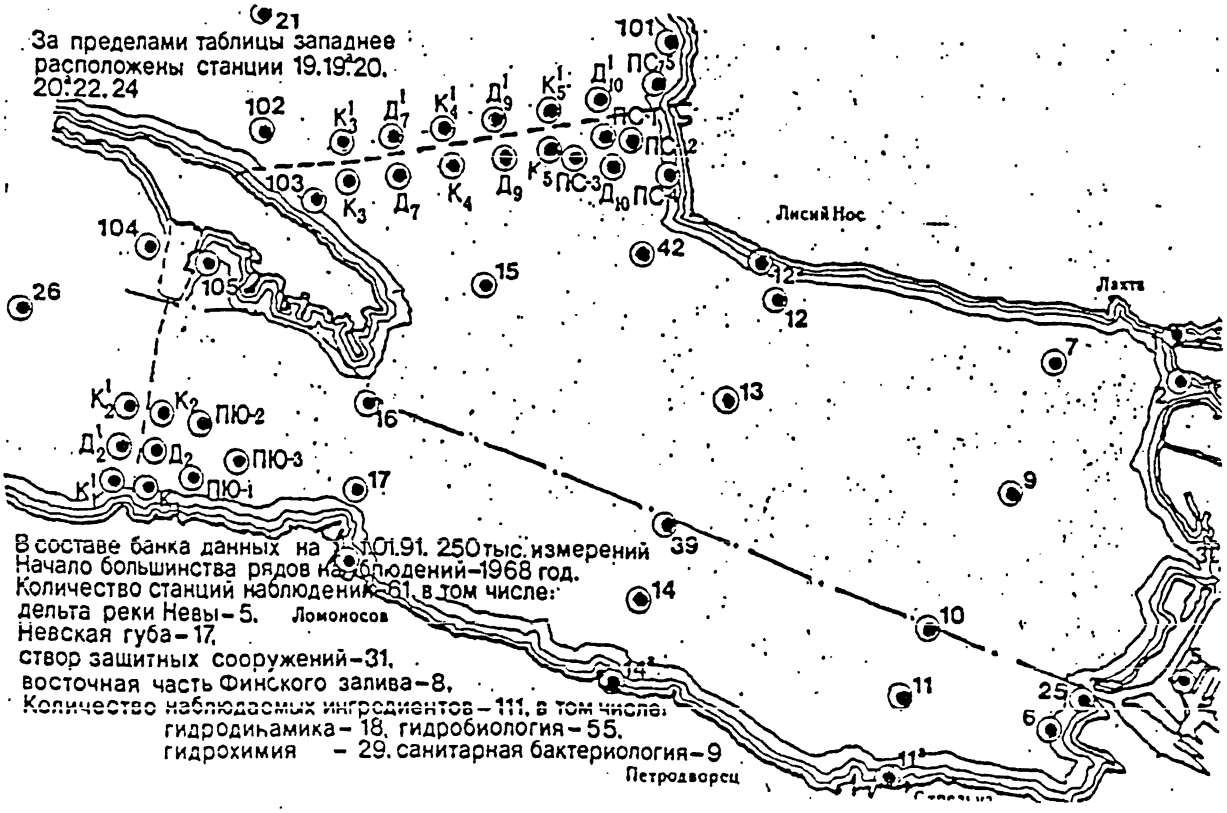
ПРОДОЛЖИТЕЛЬНОСТЬ
ПРОЕКТА: 2-3 ГОДА

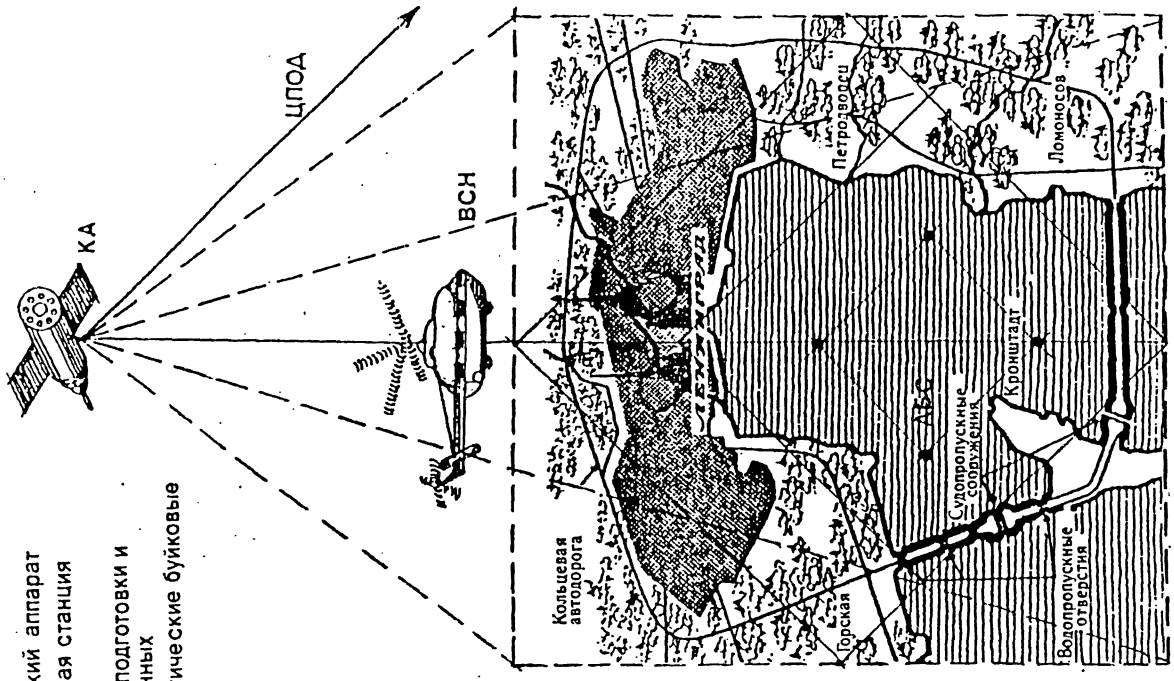
ОРИЕНТИРОВОЧНАЯ СТОИ-
МОСТЬ ПРОЕКТА : 950.000 ЭКЮ

ИНВЕСТИРОВАТЬ ПРОЕКТ ПРЕДЛАГАЕТСЯ ПО ЛИНИИ ТЕХНИЧЕСКОГО СОТРУДНИЧЕСТВА, ДАЮЩЕГО ЗНАЧИТЕЛЬНЫЙ ЭКОЛОГИЧЕСКИЙ ЭФФЕКТ.

САНКТ-ПЕТЕРБУРГ ЗАПРАШИВАЕТ ФИНАНСОВУЮ, ТЕХНИЧЕСКУЮ И ОРГАНИЗАЦИОННУЮ ПОДДЕРЖКУ ЕБРР, ИМЕЯ В ВИДУ СОЗДАНИЕ СПЕЦИАЛИЗИРОВАННОЙ ОРГАНИЗАЦИИ ДЛЯ ИНТЕГРИРОВАННОГО УПРАВЛЕНИЯ ВОДНЫМИ РЕСУРСАМИ РЕГИОНА И ПАРТИТУРЫ ЕЕ ДЕЯТЕЛЬНОСТИ НА ОСНОВЕ РЕГИОНАЛЬНЫХ НОРМ ЭКОЛОГИЧЕСКОЙ БЕЗОПАСНОСТИ.







КА - космический аппарат
ВСН - воздушная станция наблюдений
ЦПОД - центр подготовки и обработки данных
АБС - автоматические буйковые станции

Лист 6

ЛИСТ 8

3. УПРАВЛЕНИЕМ "ДЕЛЬТАЗАЩИТА" В ПЕРИОД С 14 ОКТЯБРЯ ПО 6 НОЯБРЯ 1992 ГОДА ПРОВЕДЕН ЭКСПЕРИМЕНТ ПО ИЗУЧЕНИЮ В НАТУРНЫХ УСЛОВИЯХ СТЕПЕНИ ВЛИЯНИЯ МАНЕВРИРОВАНИЯ 40-ка ОТКРЫТЫМИ ЗАТВОРАМИ 4-х ОТВЕРСТИЙ ВОДОПРОПУСКНОГО КОМПЛЕКСА ЗАЩИТЫ ГОРОДА ОТ НАВОДНЕНИЙ НА ГИДРОЛОГИЧЕСКИЙ РЕЖИМ И ЭКОЛОГИЧЕСКОЕ СОСТОЯНИЕ ЭСТУАРИЯ НЕВЫ И ВОСТОЧНОЙ ЧАСТИ ФИНСКОГО ЗАЛИВА. (Предполагается показ 4 слайдов о ходе эксперимента).

4. В АО "ВНИИГ ИМ. Б.Е.ВЕДЕНЕЕВА" РАЗРАБОТАНА "БЛОК-СХЕМА ВОЗМОЖНЫХ СОБЫТИЙ В ПРИРОДНО-ТЕХНИЧЕСКОМ КОМПЛЕКСЕ "АКВАТОРИЯ НЕВСКОЙ ГУБЫ - ГОРОД - АТМОСФЕРА", ПОДГОТОВЛЕННАЯ К ВОПЛОЩЕНИЮ В АВТОМАТИЗИРОВАННУЮ СИСТЕМУ ИНФОРМАЦИОННОГО ОБЕСПЕЧЕНИЯ.

5. СОТРУДНИЧЕСТВО УЧЕНЫХ И СПЕЦИАЛИСТОВ НИДЕРЛАНДОВ И САНКТ-ПЕТЕРБУРГА В РАМКАХ МЕМОРАНДУМА О ВЗАИМОПОНИМАНИИ ПО ПРОБЛЕМАМ УПРАВЛЕНИЯ ВОДНЫМИ РЕСУРСАМИ ПРИВЕЛО К ВОЗМОЖНОСТИ СОВМЕСТНОГО ИСПОЛЬЗОВАНИЯ ОРИГИНАЛЬНЫХ МОДЕЛИРУЮЩИХ СИСТЕМ "ДЕЛЬВАГ" И "КАРДИНАЛ".

6. РЕЗУЛЬТАТЫ РАБОТЫ МЕЖДУНАРОДНОЙ ЭКСПЕРТНОЙ КОМИССИИ, В СОСТАВЕ ВЕДУЩИХ УЧЕНЫХ АНГЛИИ, ДАНИИ, ИТАЛИИ , НИДЕРЛАНДОВ, США И ФИНЛЯНДИИ, РАБОТАВШЕЙ НА КОМПЛЕКСЕ ЗАЩИТНЫХ СООРУЖЕНИЙ В 1990 ГОДУ, И ИТОГИ КОНКУРСА ПРОЕКТНЫХ ПРЕДЛОЖЕНИЙ ПО НЕВСКОЙ ГУБЕ, ПРОВЕДЕННОГО ПО РЕШЕНИЮ ПРАВИТЕЛЬСТВА РФ В 1992 ГОДУ, ПОКАЗАЛИ:

- ОСНОВНОЙ ПРИЧИНОЙ БЕСПОКОЯЩЕГО ЭКОЛОГИЧЕСКОГО И САНИТАРНОГО СОСТОЯНИЯ ВОДНОЙ СИСТЕМЫ САНКТ-ПЕТЕРБУРГА ЯВЛЯЮТСЯ ХОЗЯЙСТВЕННО-БЫТОВЫЕ СТОЧНЫЕ ВОДЫ И СТОКИ С ПРОМЫШЛЕННЫХ И СЕЛЬСКОХОЗЯЙСТВЕННЫХ ПРЕДПРИЯТИЙ;
- ВЛИЯНИЕ ПОСТРОЕННОЙ "ДАМБЫ" НА ХАРАКТЕРИСТИКИ ВОД НЕВСКОЙ ГУБЫ И ВОСТОЧНОЙ ЧАСТИ ФИНСКОГО ЗАЛИВА НИЧТОЖНО МАЛО И В НЕДОСТРОЕННОМ ВИДЕ ОНА ДЛЯ НИХ БОЛЕЕ ОПАСНА;
- АЛЬТЕРНАТИВЫ ОСУЩЕСТВЛЯЕМОМУ ПРОЕКТУ ЗАЩИТЫ САНКТ-ПЕТЕРБУРГА ОТ МОРСКИХ НАВОДНЕНИЙ НЕТ.

ЛИСТ 9

7. ПРОГНОЗИРУЕМАЯ СИНОПТИЧЕСКАЯ СИТУАЦИЯ ПРЕВРАТИЛА СТРОИТЕЛЬСТВО КОМПЛЕКСА СООРУЖЕНИЙ ЗАЩИТЫ САНКТ-ПЕТЕРБУРГА ОТ НАВОДНЕНИЙ ИЗ ОРУДИЯ ПОЛИТИЧЕСКОЙ БОРЬБЫ В ОДНО ИЗ ПРИОРИТЕТНЫХ НАПРАВЛЕНИЙ РАЗВИТИЯ ГОРОДА, ВОПРОС О СРОЧНОМ ЗАВЕРШЕНИИ КОТОРОГО В НАСТОЯЩЕЕ ВРЕМЯ ПО ПРЕДСТАВЛЕНИЮ МЭРА САНКТ-ПЕТЕРБУРГА А.А.СОБЧАКА РАССМАТРИВАЕТСЯ В ПРАВИТЕЛЬСТВЕ РОССИЙСКОЙ ФЕДЕРАЦИИ.

8. БЫСТРЕЙШЕЕ ЗАВЕРШЕНИЕ СТРОИТЕЛЬСТВА КОМПЛЕКСА СООРУЖЕНИЙ ДЛЯ ЗАЩИТЫ САНКТ-ПЕТЕРБУРГА ОТ НАВОДНЕНИЙ И АВТОДОРОГИ ПО ЕГО ГРЕБНЮ - - ЕДВА ЛИ НЕ ОСНОВНОЕ УСЛОВИЕ ЗАЩИТЫ ИНВЕСТИЦИЙ ПО БОЛЬШИНСТВУ РАССМАТРИВАЕМЫХ НА НАСТОЯЩЕМ ЗАСЕДАНИИ РУКОВОДСТВА ЕБРР ПРОГРАММ И ПРОЕКТОВ.

ЛИСТ IO

ЦЕЛИ ПРОЕКТА:

I. УСИЛЕНИЕ ГОРОДСКИХ СТРУКТУР ИНТЕГРАЛЬНЫМ УПРАВЛЕНИЕМ ВОДНЫМИ РЕСУРСАМИ, КАК I ЭТАП УПРАВЛЕНИЯ ВОДНЫМИ РЕСУРСАМИ СИСТЕМЫ ЛАДОГА--НЕВА - ФИНСКИЙ ЗАЛИВ.

2. РАЗРАБОТКА РЕГИОНАЛЬНЫХ ЭКОЛОГИЧЕСКИХ НОРМАТИВОВ ВОДНОЙ СРЕДЫ.

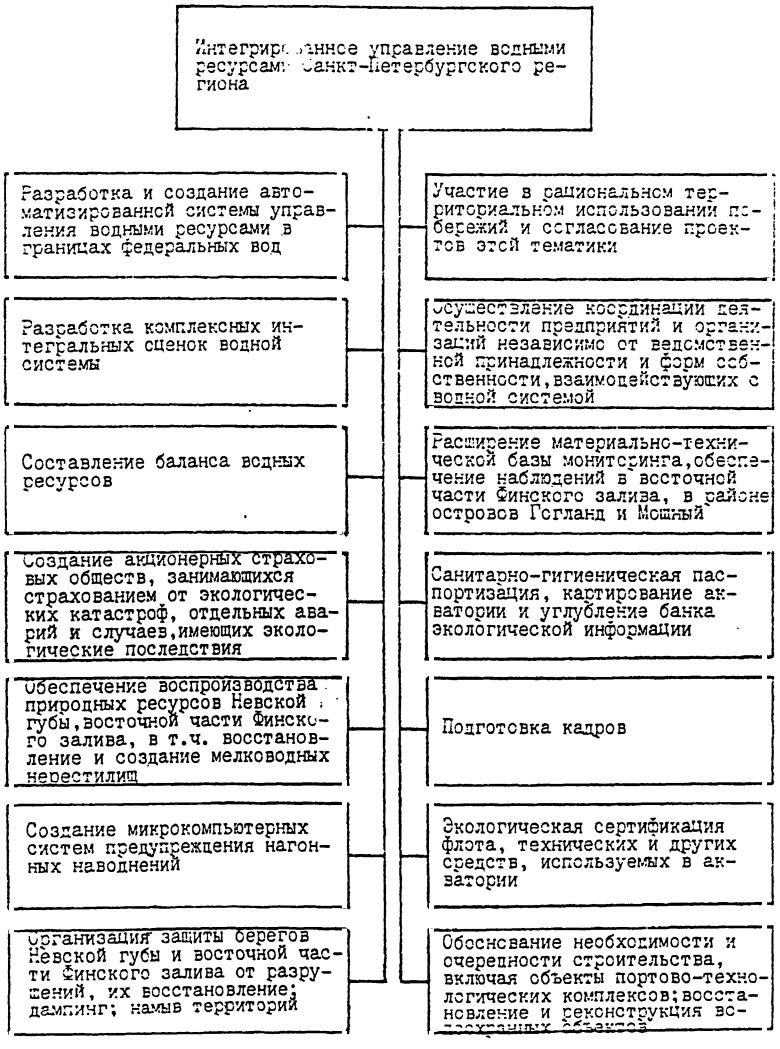
3. ОБЕСПЕЧЕНИЕ ВЗАИМОДЕЙСТВИЯ МЕЖДУ ИНЖЕНЕРНЫМИ И ЭКОЛОГИЧЕСКИМИ ИССЛЕДОВАНИЯМИ И СТРУКТУРАМИ В ПРАВИТЕЛЬСТВЕ ГОРОДА, ОТВЕТСТВЕННЫМИ ЗА ЭКОНОМИКУ И ФИНАНСЫ.

4. СОЗДАНИЕ УПРАВЛЕНЧЕСКОЙ КОМПЬЮТЕРНОЙ СИСТЕМЫ ДЛЯ ТЕХНИЧЕСКИХ, ЭКОЛОГИЧЕСКИХ И ЭКОНОМИЧЕСКИХ ОЦЕНОК ПРЕДПОЛАГАЕМЫХ РЕШЕНИЙ.

5. ПРОВЕДЕНИЕ ОЦЕНОК ВЛИЯНИЯ НА ОКРУЖАЮЩУЮ СРЕДУ ОТ ПРЕДПОЛАГАЕМЫХ КАПИТАЛОВЛОЖЕНИЙ (ОЧИСТКА СТОЧНЫХ ВОД; РАЗВИТИЕ ПОРТОВО-ТЕХНОЛОГИЧЕСКИХ КОМПЛЕКСОВ ; НОВОЕ РАСПОЛОЖЕНИЕ МЕСТ ОТДЫХА, ЗОН ИНДИВИДУАЛЬНОГО СТРОИТЕЛЬСТВА, ПРОМЫШЛЕННЫХ ОБЪЕКТОВ И Т.Д.).

ЛИСТ II

СОСТАВ ПРОЕКТА:



ЛИСТ 12

ЗАКЛЮЧЕНИЕ:

ПРЕДСТАВЛЯЕМЫЙ ПРОЕКТ ПОЛНОСТЬЮ СООТВЕТСТВУЕТ СОГЛАШЕНИЮ ОБ УЧРЕЖДЕНИИ ЕВРОПЕЙСКОГО БАНКА РЕКОНСТРУКЦИИ И РАЗВИТИЯ, В КОТОРОМ ЗАПИСАНО: "СОДЕЙСТВОВАТЬ ВО ВСЕЙ СВОЕЙ ДЕЯТЕЛЬНОСТИ ЭКОЛОГИЧЕСКИ ЗДОРОВОМУ И УСТОЙЧИВОМУ РАЗВИТИЮ:" В ДАННОМУ СЛУЧАЕ - РАЗВИТИЮ САНКТ-ПЕТЕРБУРГА И ЛЕНИНГРАДСКОЙ ОБЛАСТИ.

В ХОДЕ СТРУКТУРНОЙ ПЕРЕСТРОЙКИ ХОЗЯЙСТВОВАНИЯ НАРАЩИВАЕТСЯ ОРГАНИЗАЦИОННЫЙ ПОТЕНЦИАЛ В ОБЛАСТИ ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ.

РАЗРАБОТКА ПРОЕКТА - ЗАМЕТНЫЙ ВКЛАД В РЕАЛИЗАЦИЮ "КОНВЕНЦИИ ОБ ОХРАНЕ МОРСКОЙ СРЕДЫ БАЛТИЙСКОГО МОРЯ" ОТ 9 АПРЕЛЯ 1992 ГОДА.

НАШ КОНТАКТНЫЙ ТЕЛЕФОН:

(812) 312-35-38.

Annex G copies of the letters from EBRD (Mr. Graham Smith) to Mr. Usanov (Morzachshita)

(russia\delft)

European Bank
for Reconstruction and Development

TO: Lenmorzashita FAX No: (7 812) 312 40 27

ATTN: Mr. Boris P. Usanov

FROM: Graham Smith

REPLY TO FAX No: (071) 338 6674

DATE: 11 November, 1994 No. OF PAGES: 1
(including cover page)

MESSAGE:

Dear Mr. Usanov,

I refer to your proposal to start an integrated water management programme with the help of Delft Hydraulics of the Netherlands.

We have already carefully reviewed the proposal more than a year ago and held discussions with Delft Hydraulics on their proposal. More recently Timo Makela, Senior Banker, visited St. Petersburg and held extensive discussions on the topic with Mr. Frolov from Lenkomekologiia, the representative of the Russian Ministry of Environment in the region.

Based on these discussions and our review I would like to express our strong support to the programme which will enable regional authorities to manage water resources better in future. We would recommend you make sure that the programme is well integrated into overall environmental management framework in the region.

As the programme is an independent co-operation project between the St. Petersburg authorities and Delft Hydraulics of the Netherlands, we would recommend you continue discussions with bilateral donors in trying to find financing for its implementation. Possible sources could be funds from relevant programmes in the Netherlands or the European Union.

Yours sincerely,

Graham Smith

Graham Smith
Director, Transport and Environmental
Infrastructure North

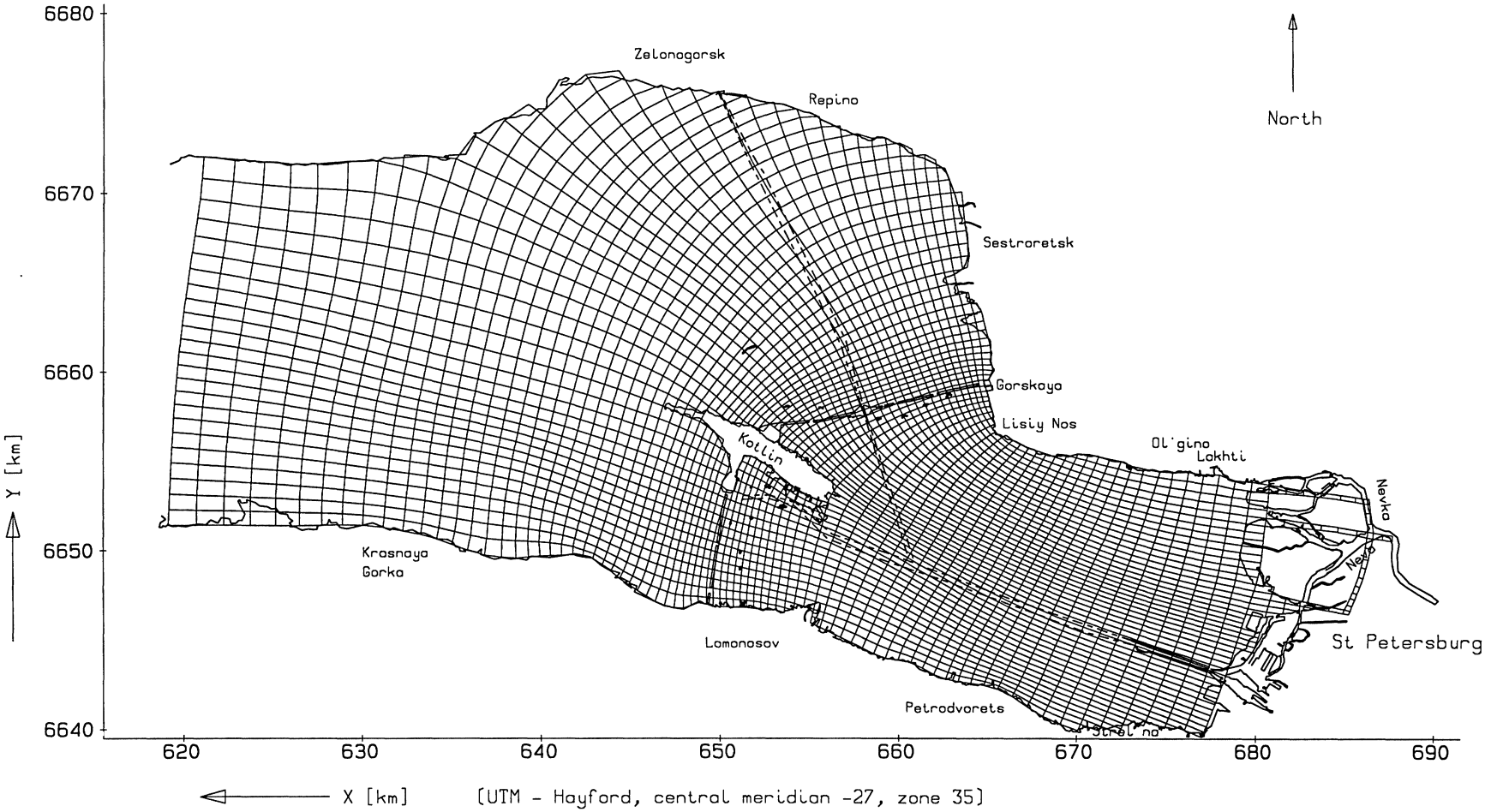
One Exchange Square London EC2A 2EH
Telephone: 071 338 6000 *or* 071 496 6000 Fax: 071 338 6100 *or* 071 496 6100 Telex: 8812161EBRD L G

Annex H results from pilot model (TRISULA-DELWAQ) to simulate water pollution in Neva Bay and Eastern Gulf of Finland

Integrated Water Management St.Petersburg

results from pilot model (TRISULA-DELWAQ) to simulate water pollution in Neva Bay and Eastern Gulf of Finland

april 1994

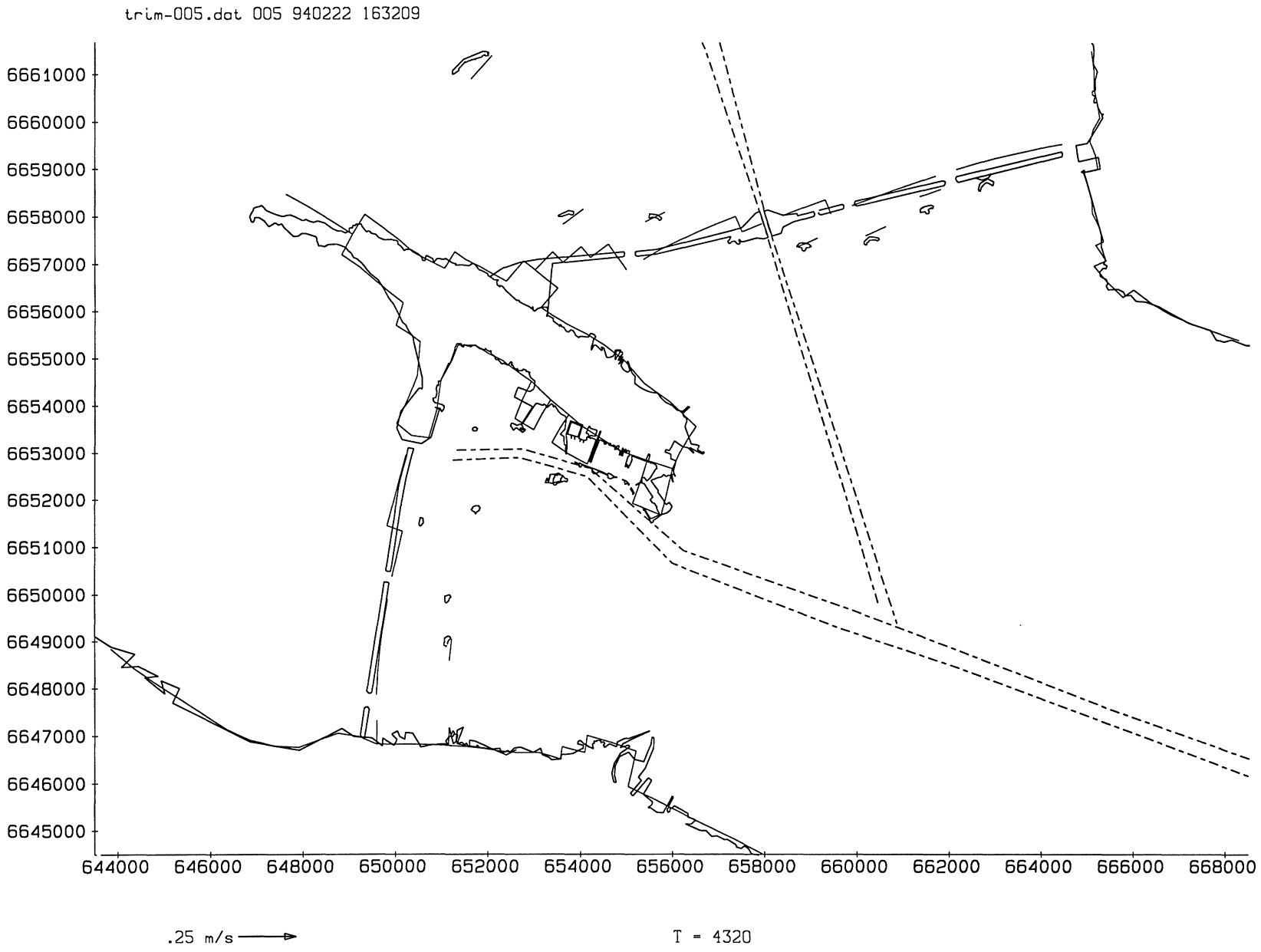


DELFT HYDRAULICS

St Petersburg Barrier
Curvilinear grid, 89*50 cells
Admiralty Chart 2264 [1988], Russian Charts

TRISULA	nev
Nevskaya Cuba	
Feb 22, 1994	Fig.

DELFT HYDRAULICS



DELFT HYDRAULICS

TRISULA Nevskaya model Run : 005
velocity field

vec1

1994-02-23
09:59:58

St Petersburg Barrier

Depth isolines

KES

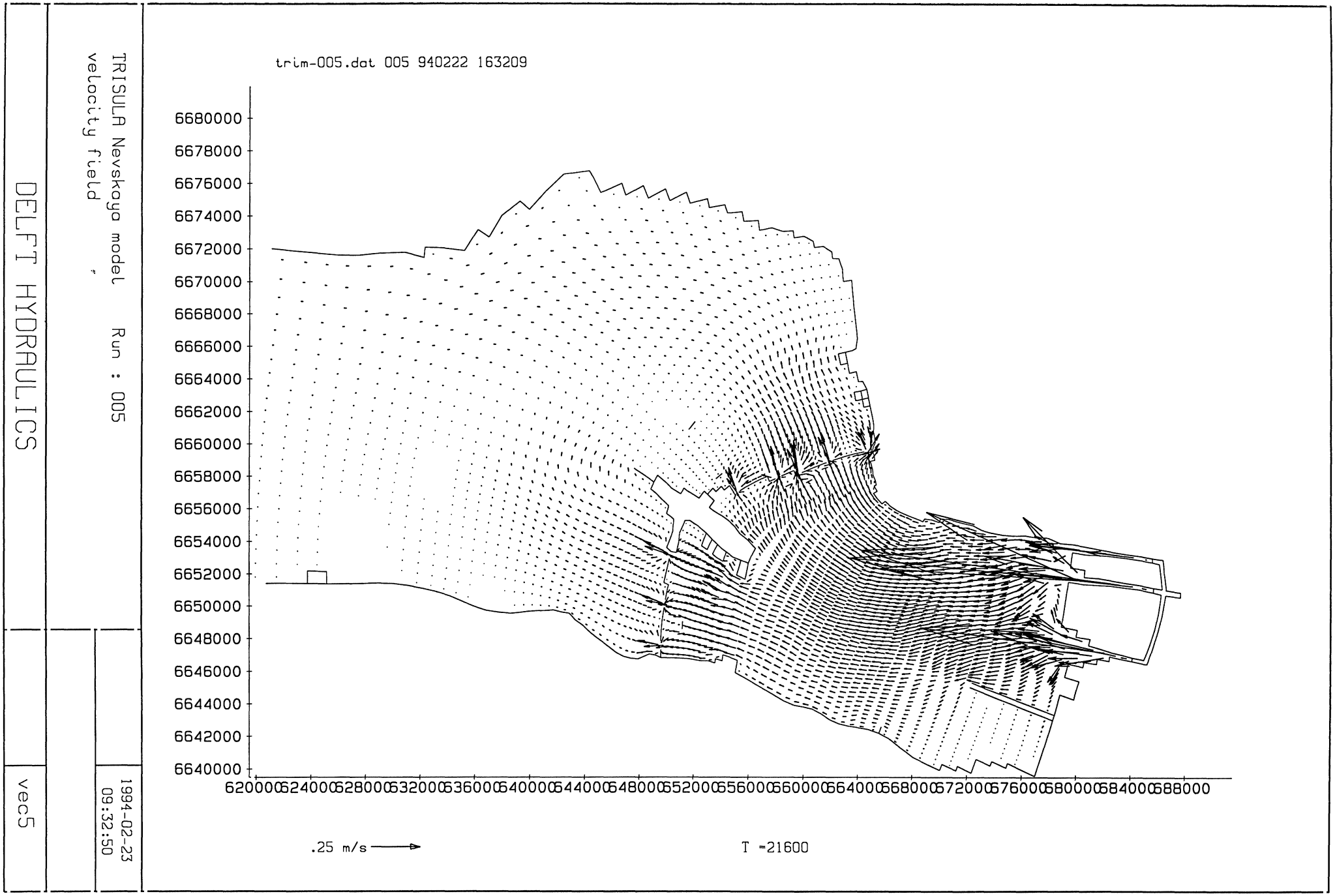
1994-02-22
16:5:22

Nevskaya Guba

DELFT HYDRAULICS

Z-axis

Fig. 01



DELFT HYDRAULICS

TRISULA Nevskaya model Run : 005
velocity field

vec5

1994-02-23
09:32:50

TRISULA Nevskaya model Run : 005
velocity field

1994-02-23
10:00:07

DELFT HYDRAULICS

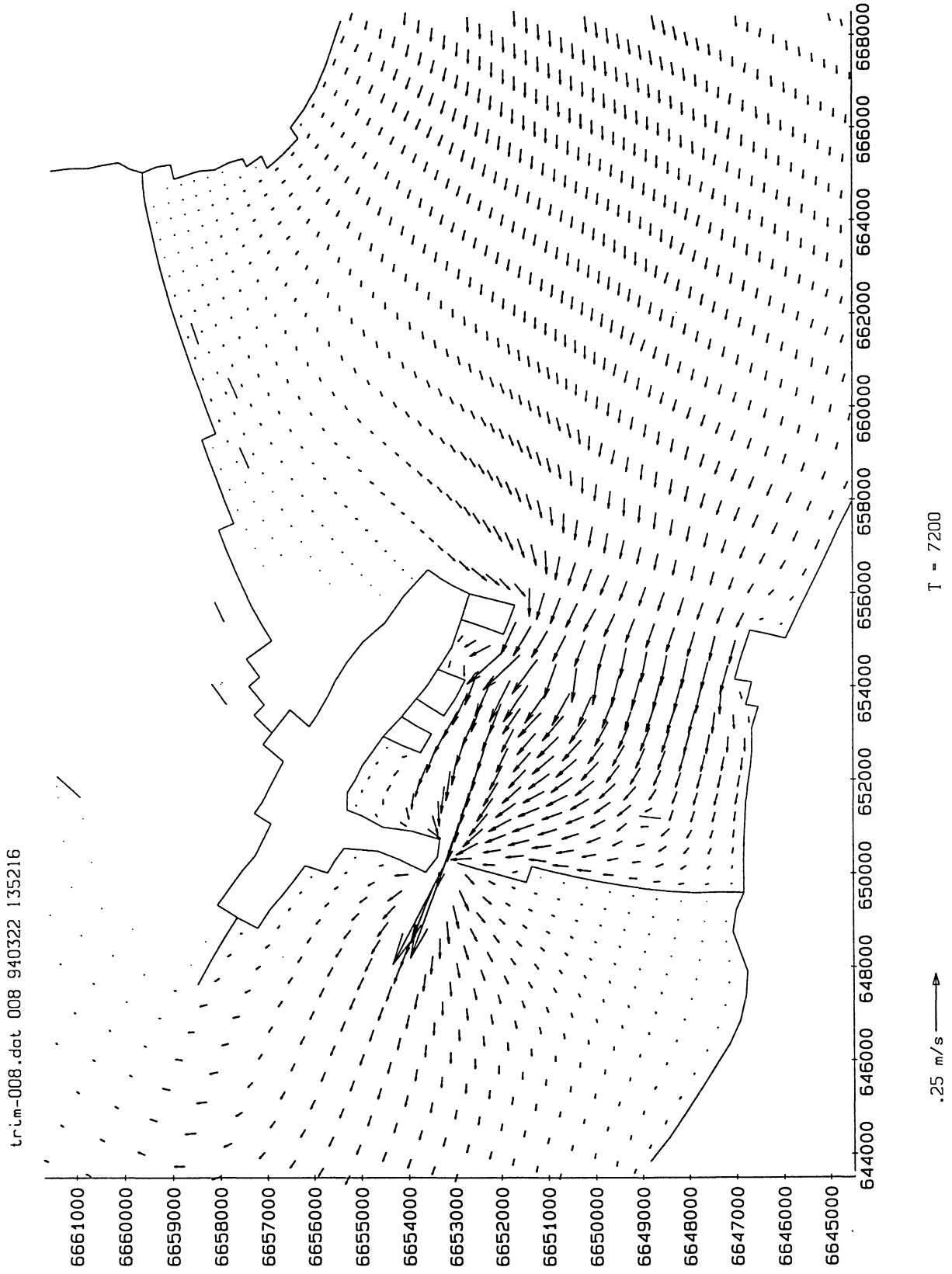
vec5

TRISULA Nevskaya model Run : 008
velocity field

1994-03-22
15:03:26

DELFT HYDRAULICS

vec2



TRISULA Nevskaya model Run : 008
velocity field

1994-03-22
15:03:24

DELFT HYDRAULICS

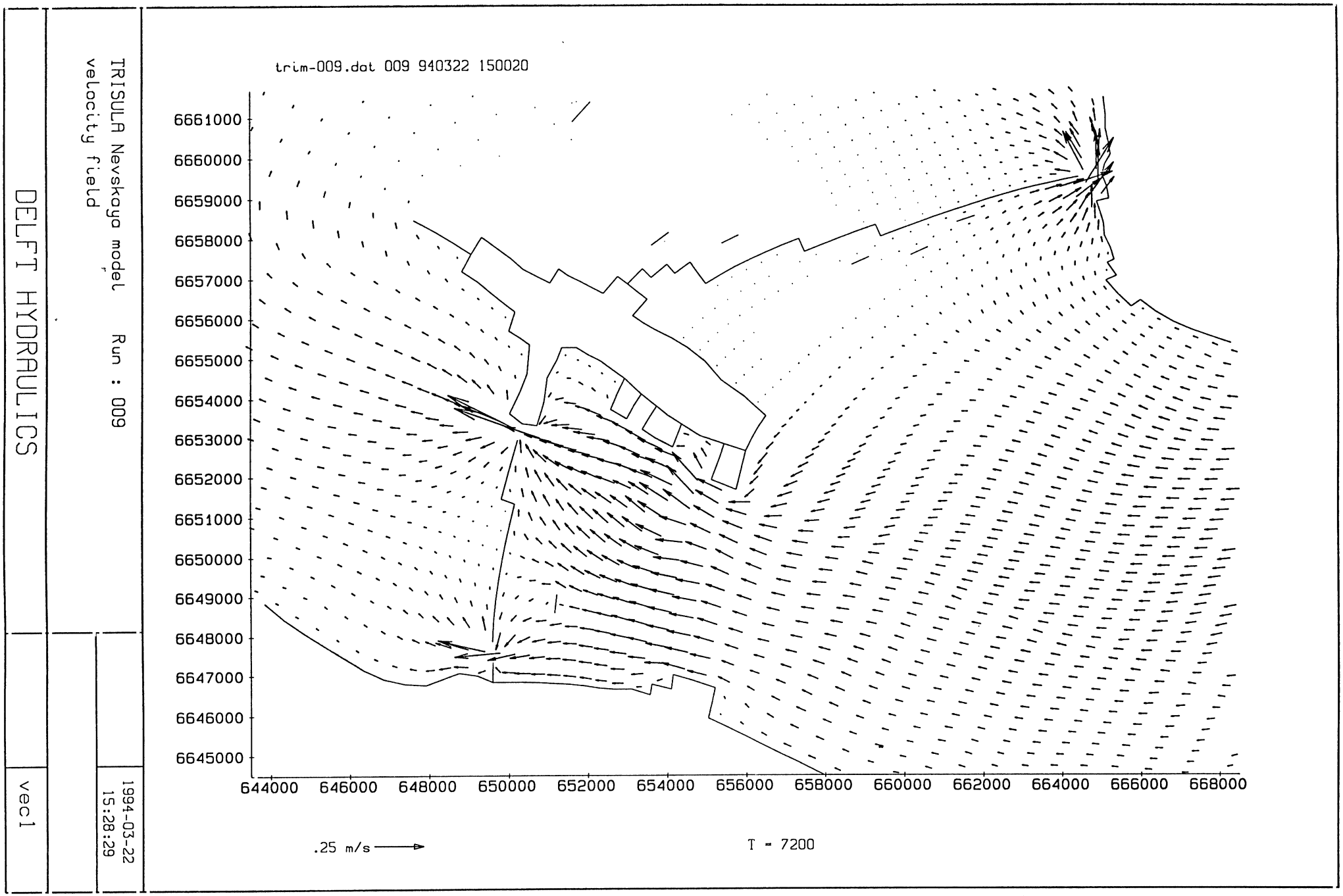
vec1

TRISULA Nevskaya model Run : 009
velocity field

1994-03-22
15:28:31

DELFT HYDRAULICS

vec2

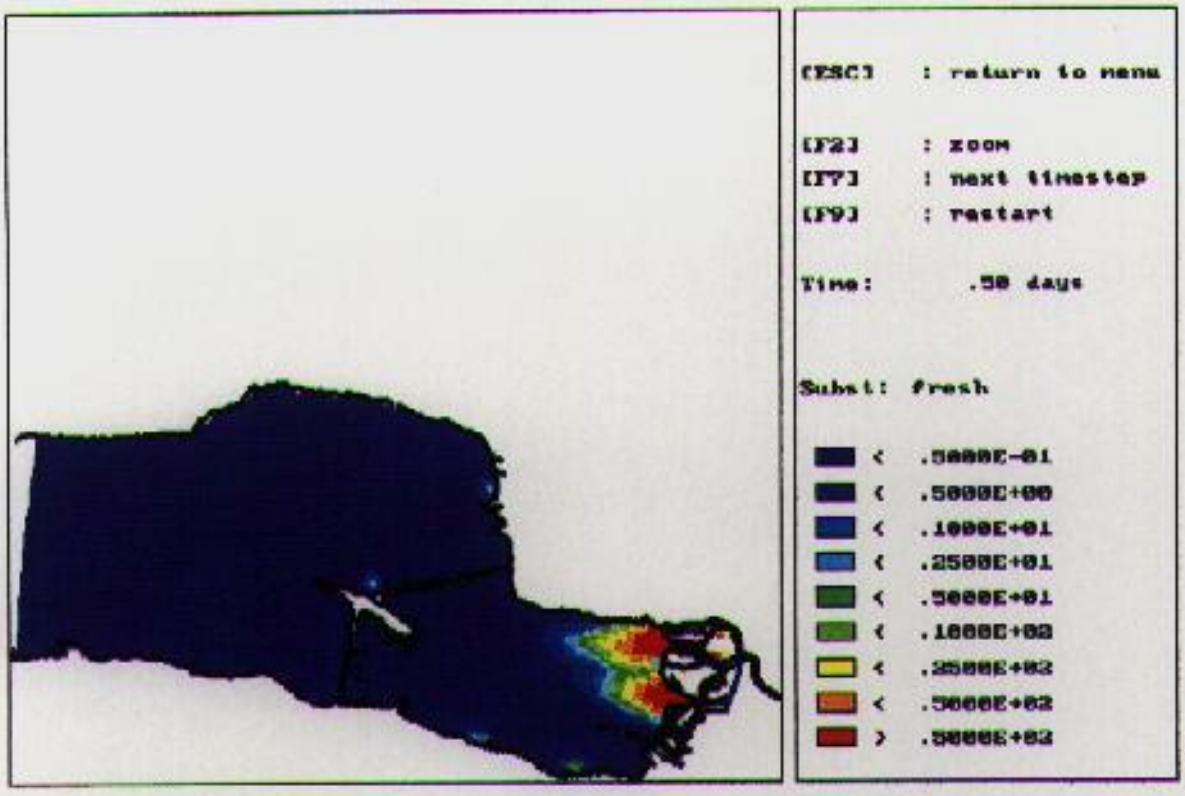


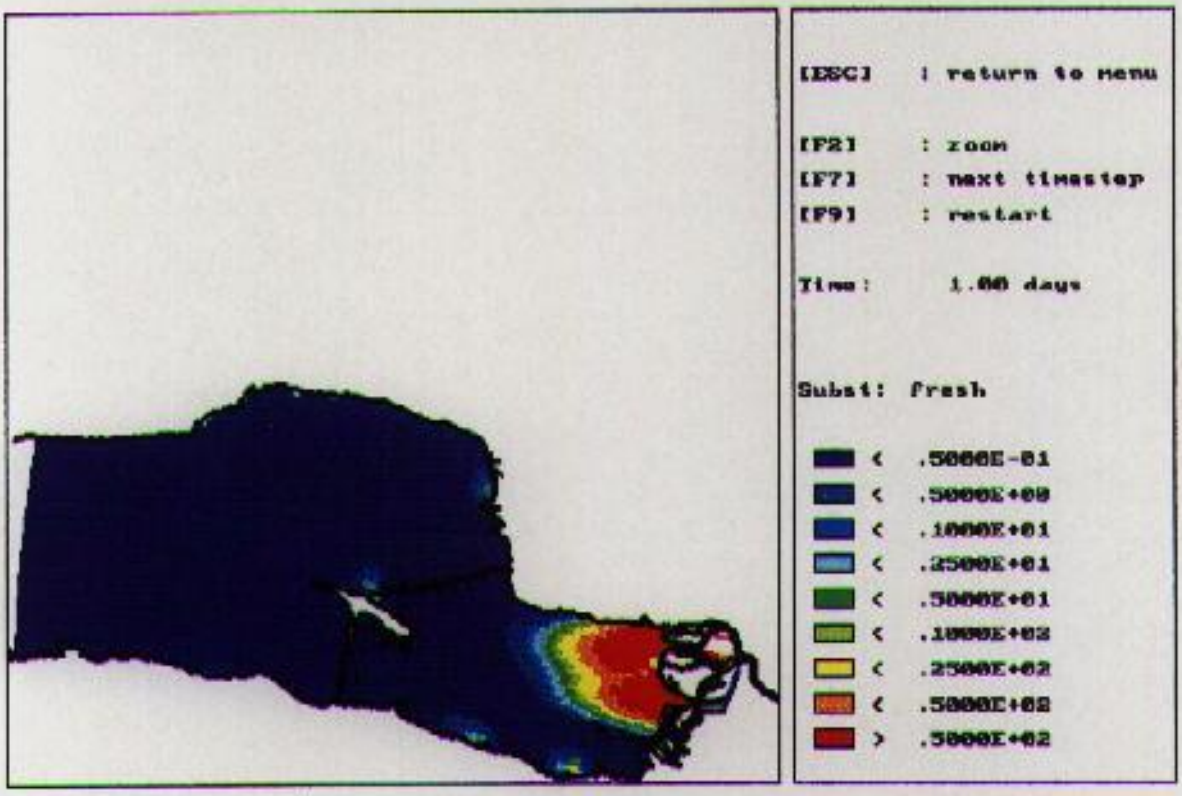
DELFT HYDRAULICS

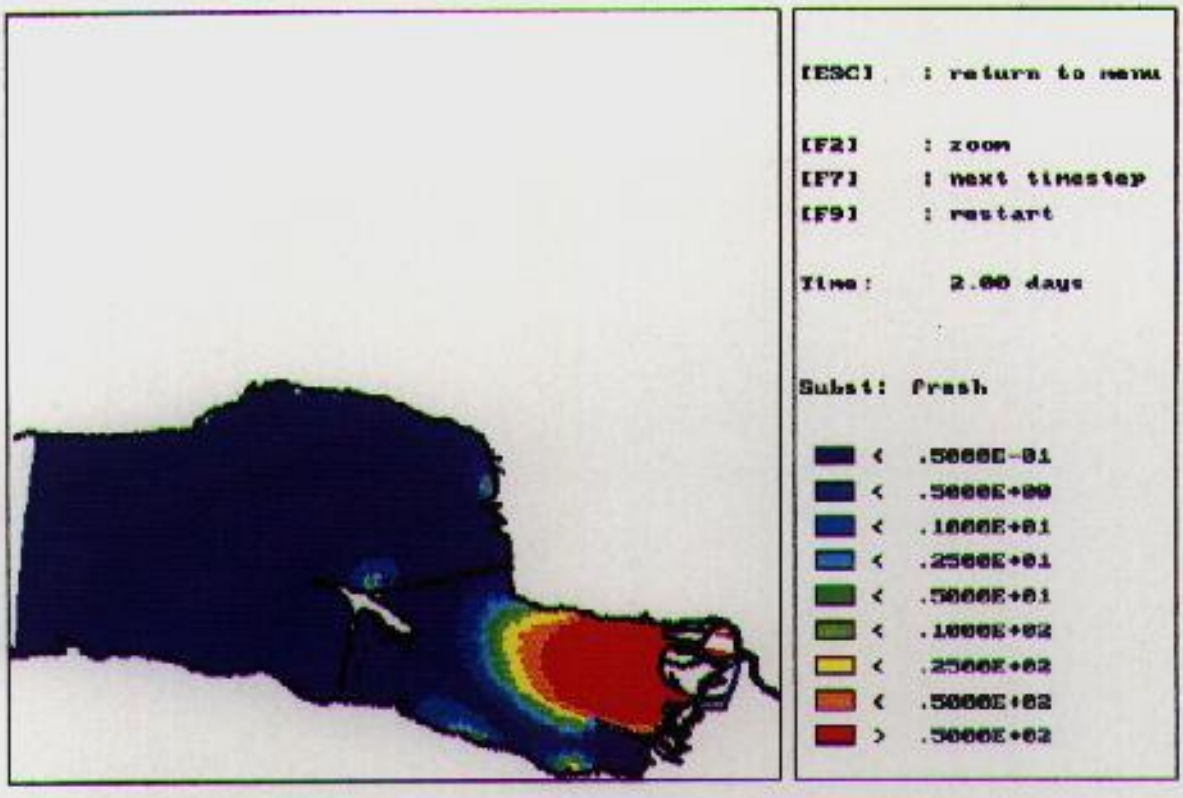
TRISULA Nevskaya model Run : 009
velocity field

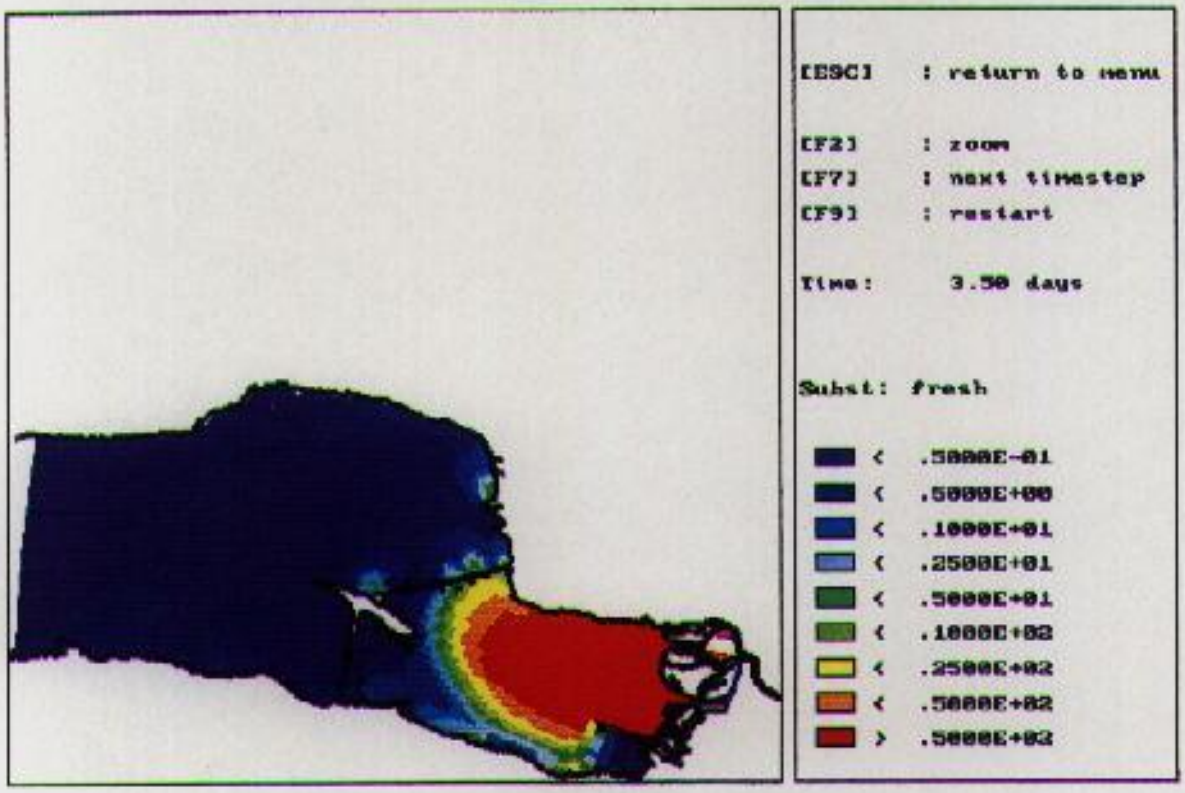
vec1

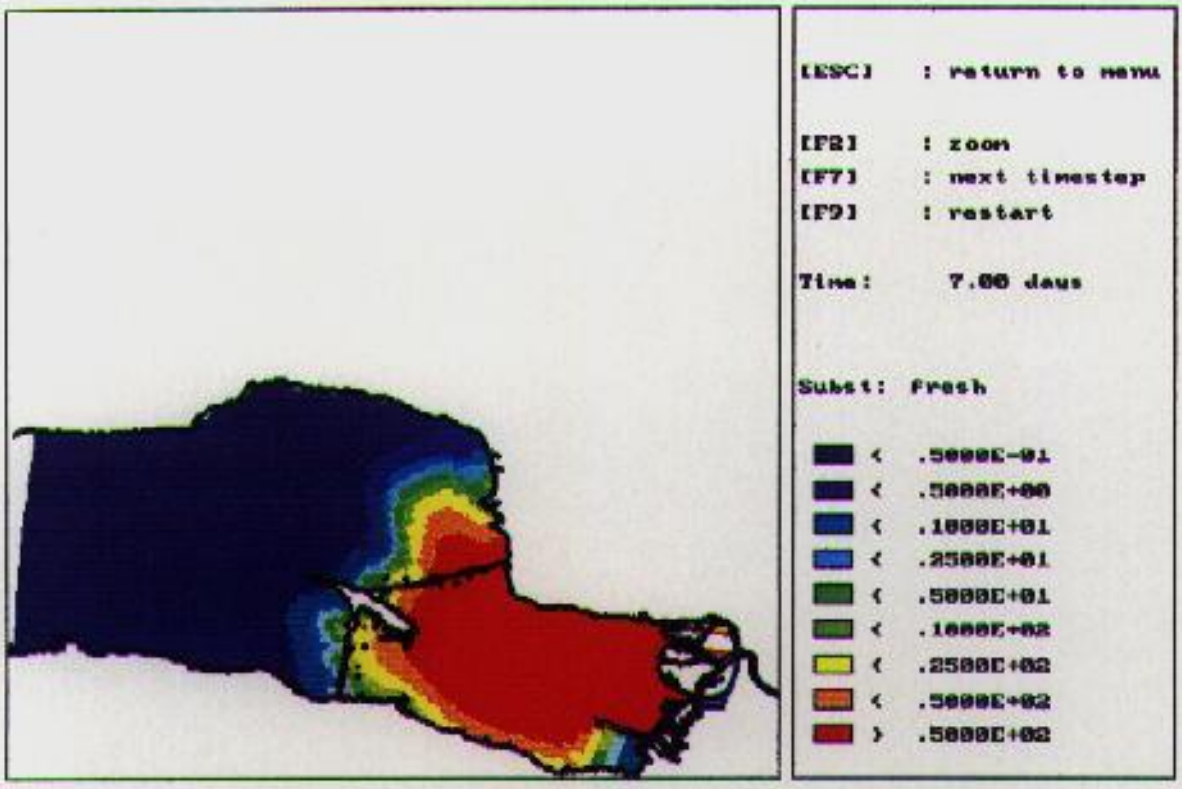
1994-03-22
15:28:29

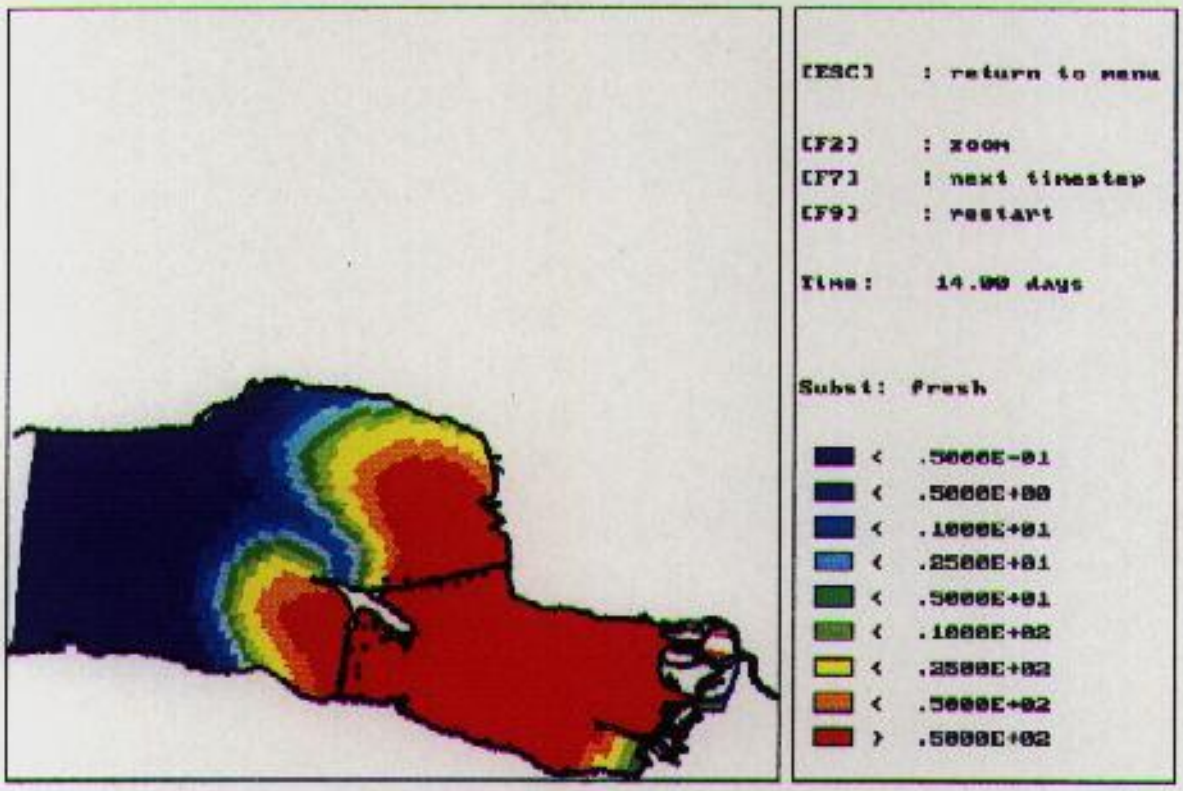

[ESC] : return to menu
[F2] : zoom
[F7] : next timestep
[F9] : restart
Time: .50 days
Subst: fresh
< .5000E-01
< .5000E+00
< .1000E+01
< .2500E+01
< .5000E+01
< .1000E+02
< .2500E+02
< .5000E+02
> .5000E+02


[ESC] : return to menu
[F2] : zoom
[F7] : next timestep
[F9] : restart
Time: 1.00 days
Subst: fresh
< .5000E-01
< .5000E+00
< .1000E+01
< .2500E+01
< .5000E+01
< .1000E+02
< .2500E+02
< .5000E+02
> .5000E+02

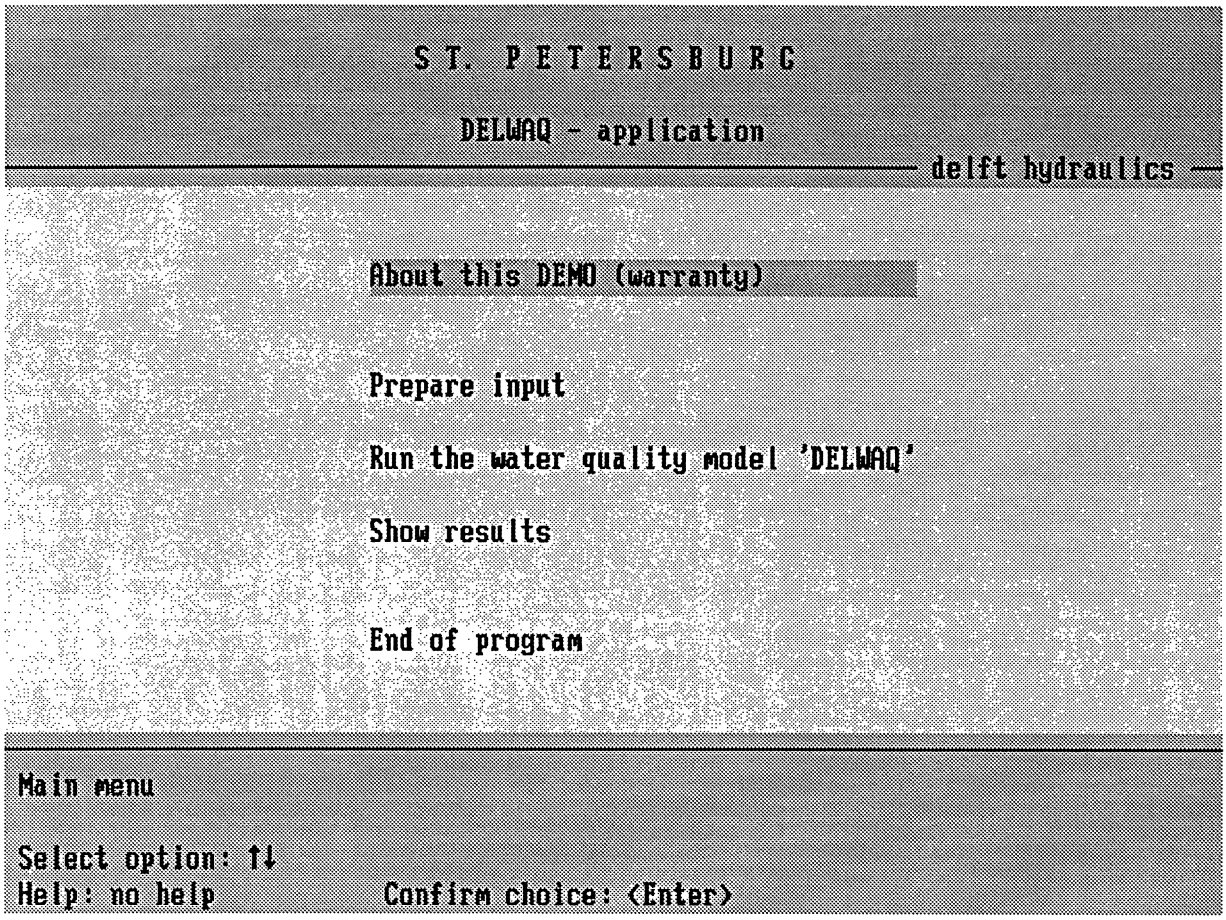

[ESC] : return to menu
[F2] : zoom
[F7] : next timestep
[F9] : restart
Time: 2.00 days
Subst: fresh
< .5000E-01
< .5000E+00
< .1000E+01
< .2500E+01
< .5000E+01
< .1000E+02
< .2500E+02
< .5000E+02
> .5000E+02

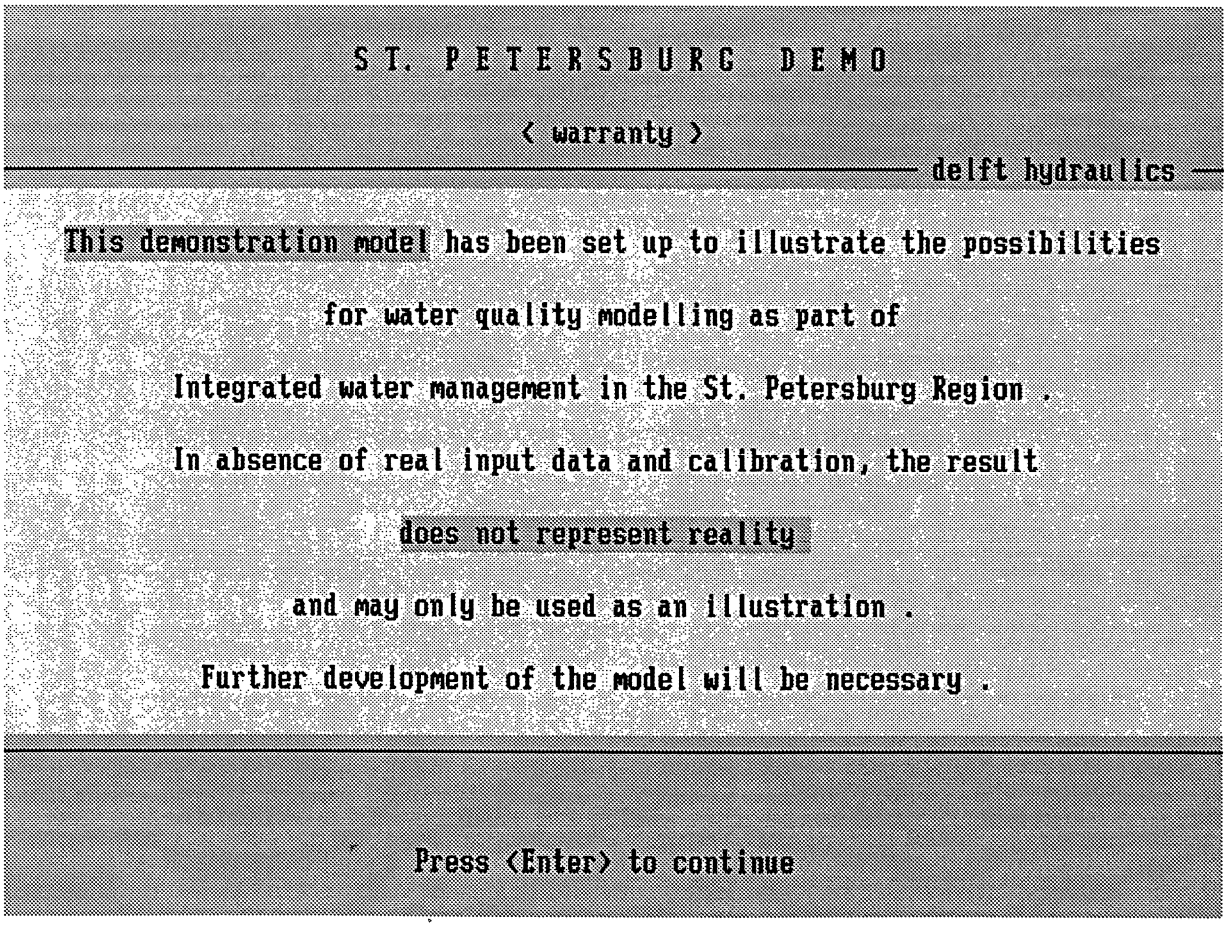

[ESC] : return to menu
[F2] : zoom
[F7] : next timestep
[F9] : restart
Time: 3.50 days
Subst: fresh
< .5000E-01
< .5000E+00
< .1000E+01
< .2500E+01
< .5000E+01
< .1000E+02
< .2500E+02
< .5000E+02
> .5000E+02

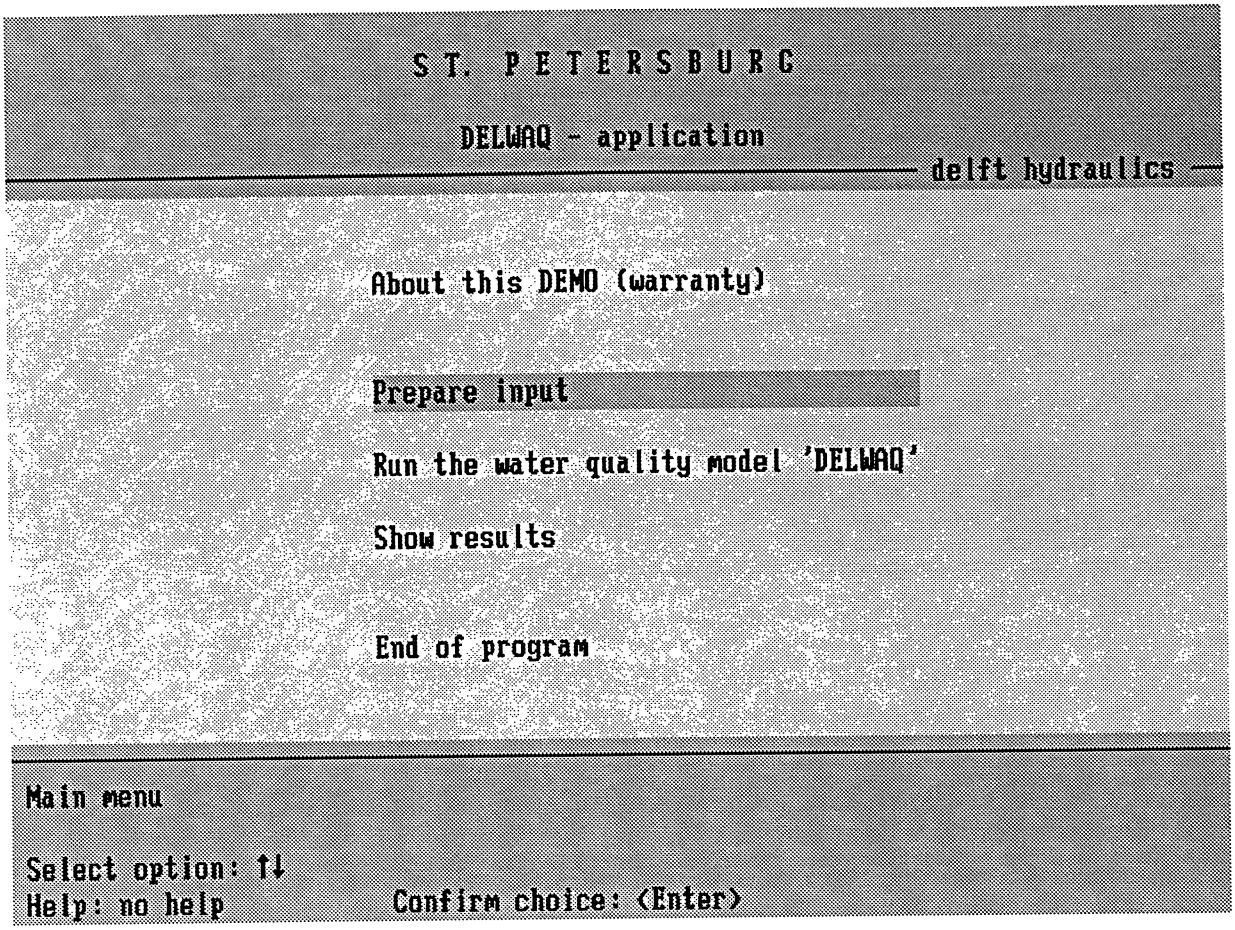

[ESC] : return to menu
[F2] : zoom
[F7] : next timestep
[F9] : restart
Time: 7.00 days
Subst: Fresh
< .5000E-01
< .5000E+00
< .1000E+01
< .2500E+01
< .5000E+01
< .1000E+02
< .2500E+02
< .5000E+02
> .5000E+02

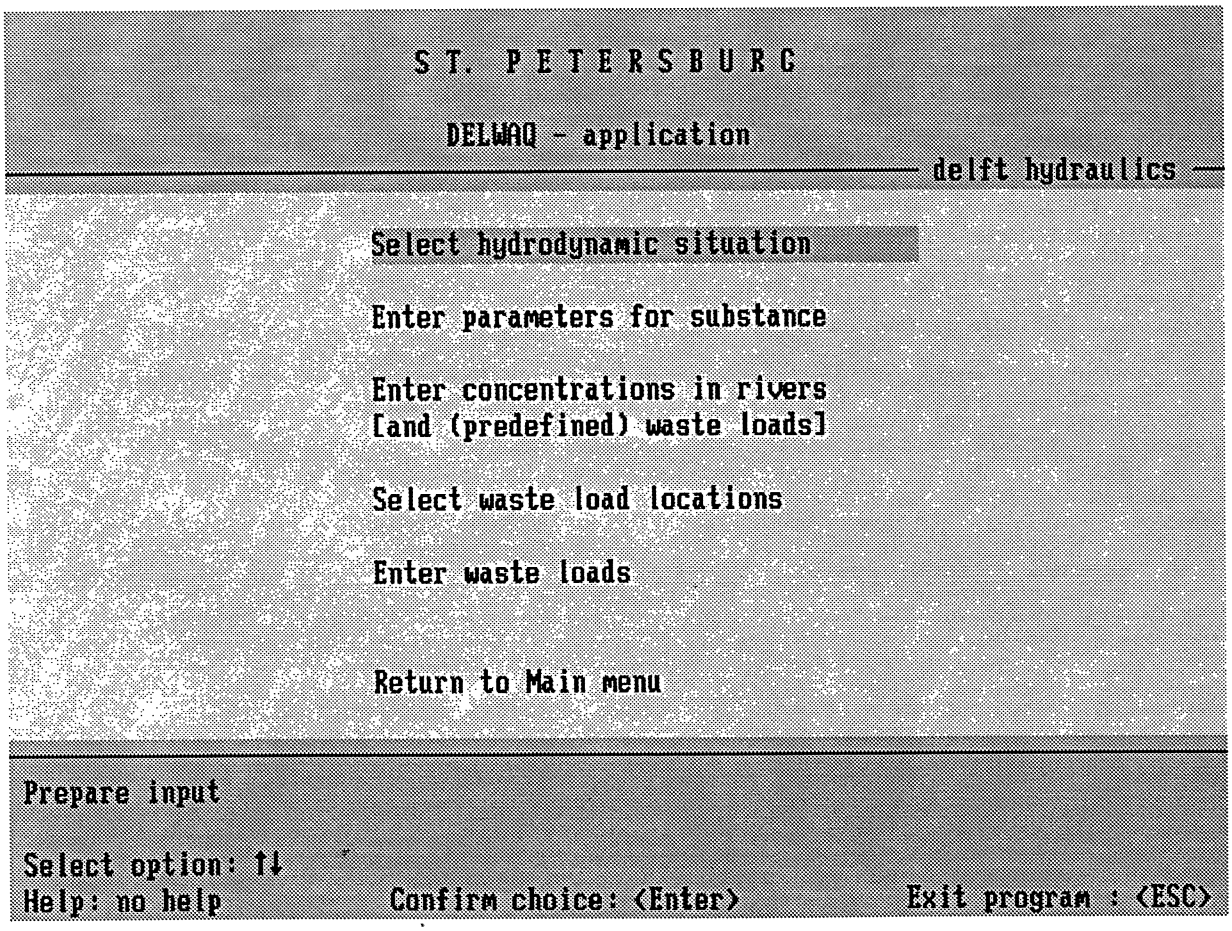

[ESC] : return to menu
[F2] : zoom
[F7] : next timestep
[F9] : restart
Time: 14.00 days
Subst: Fresh
< .5000E-01
< .5000E+00
< .1000E+01
< .2500E+01
< .5000E+01
< .1000E+02
< .2500E+02
< .5000E+02
> .5000E+02

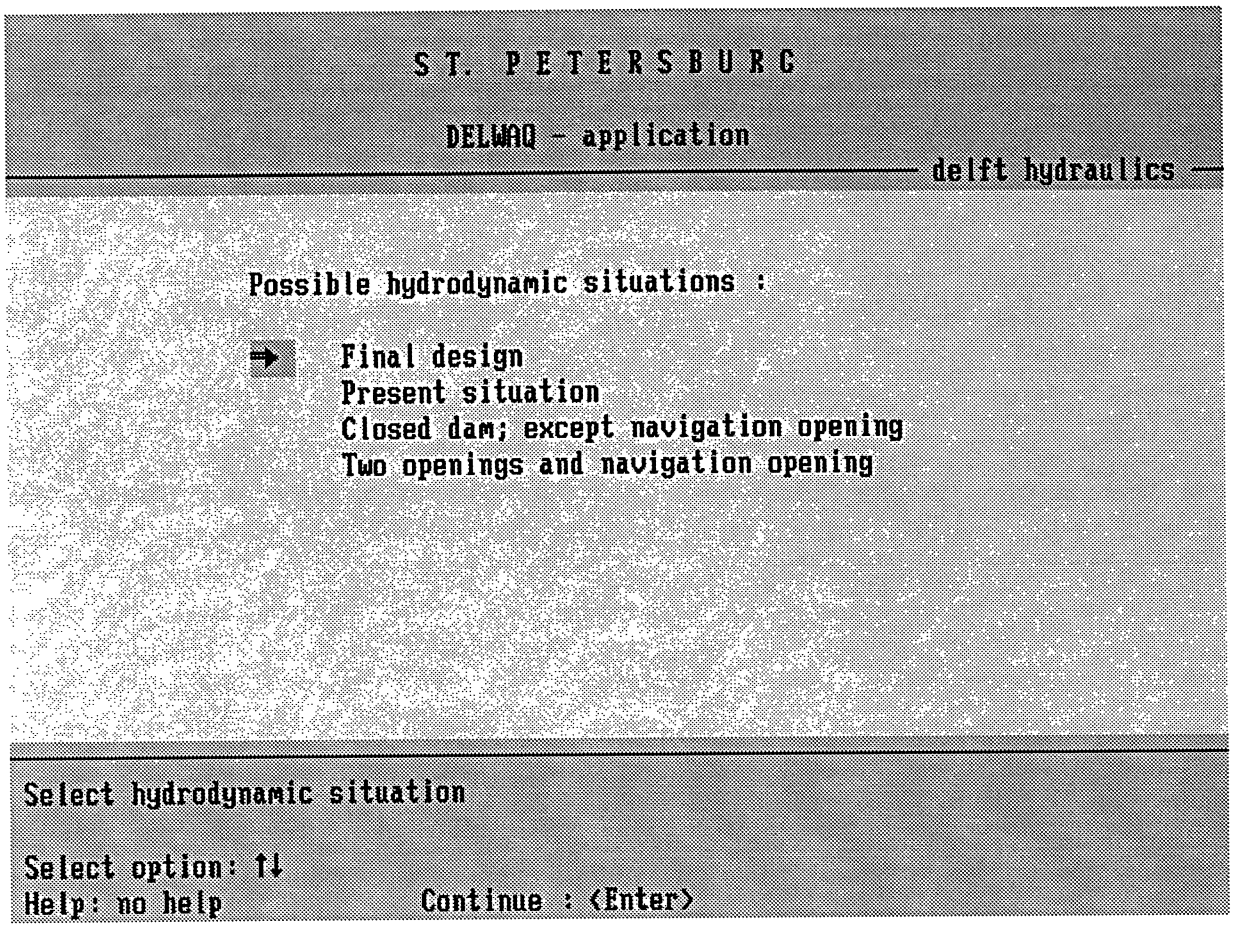
Annex I pilot and demonstration model for hydrodynamical and water quality for the Neva Bay

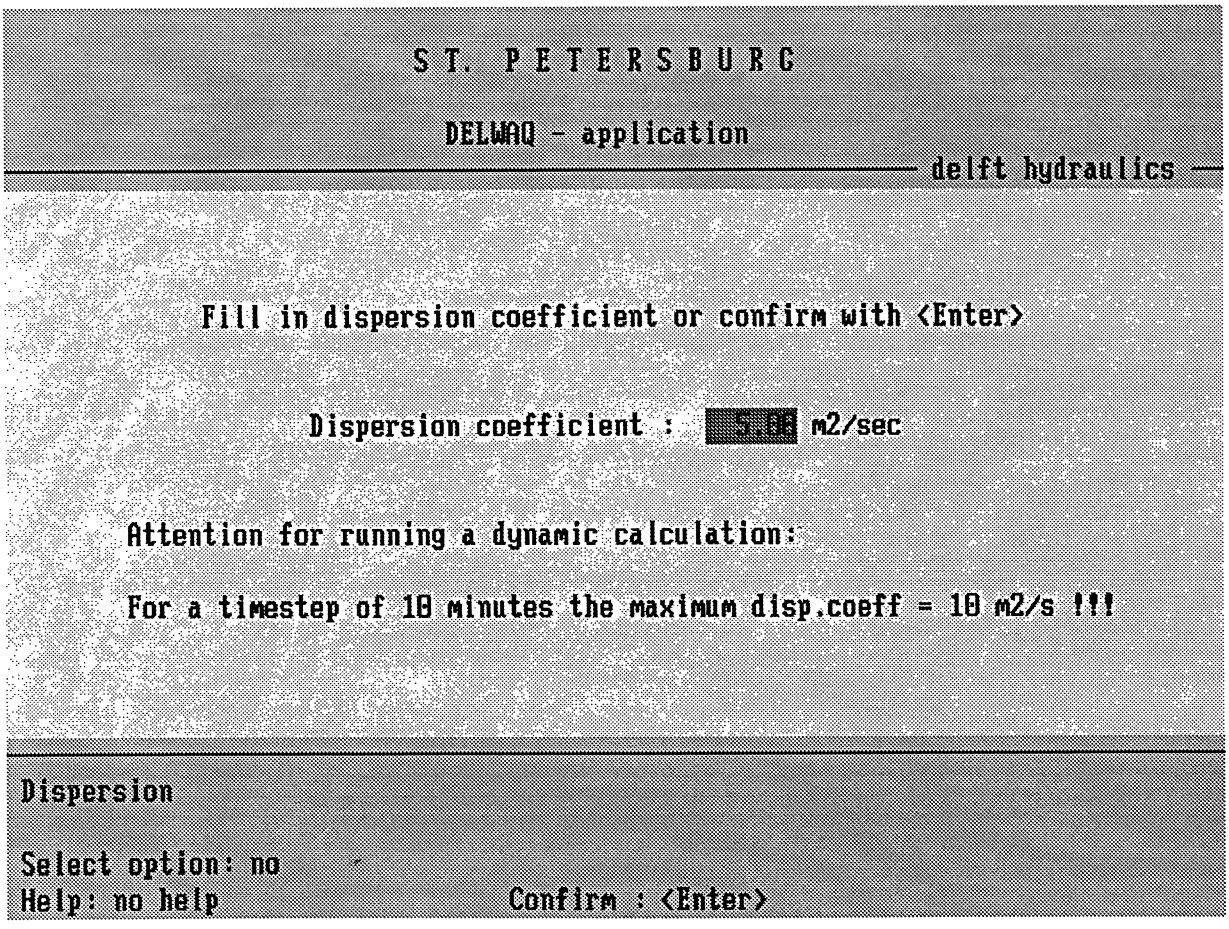

S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
About this DEMO (warranty)
Prepare input
Run the water quality model 'DELWAQ'
Show results
End of program
Main menu
Select option: ↑↓
Help: no help
Confirm choice: <Enter>

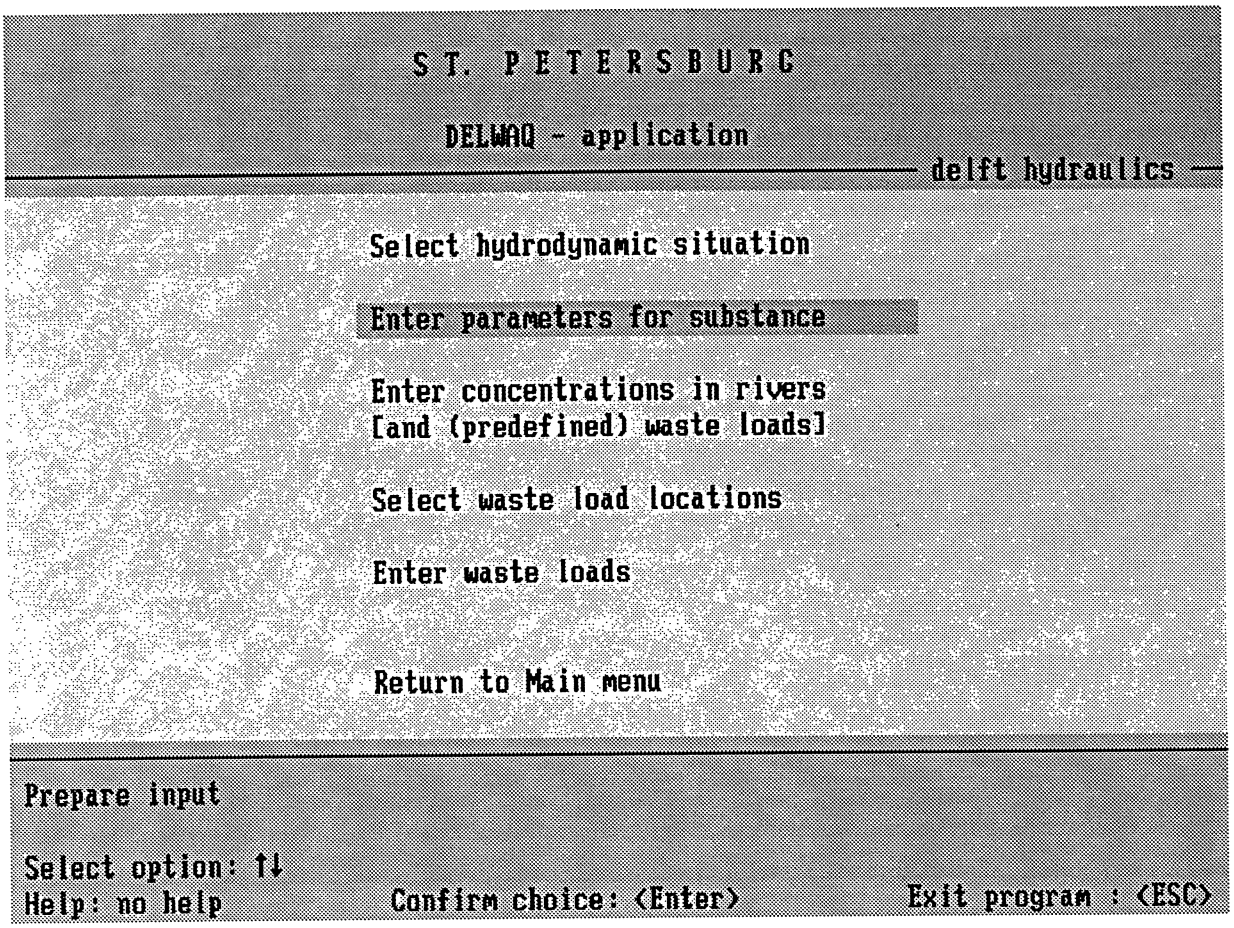

S T. P E T E R S B U R G D E M O
< warranty >
delft hydraulics
This demonstration model has been set up to illustrate the possibilities
for water quality modelling as part of
Integrated water management in the St. Petersburg Region .
In absence of real input data and calibration, the result
does not represent reality
and may only be used as an illustration .
Further development of the model will be necessary .
Press <Enter> to continue

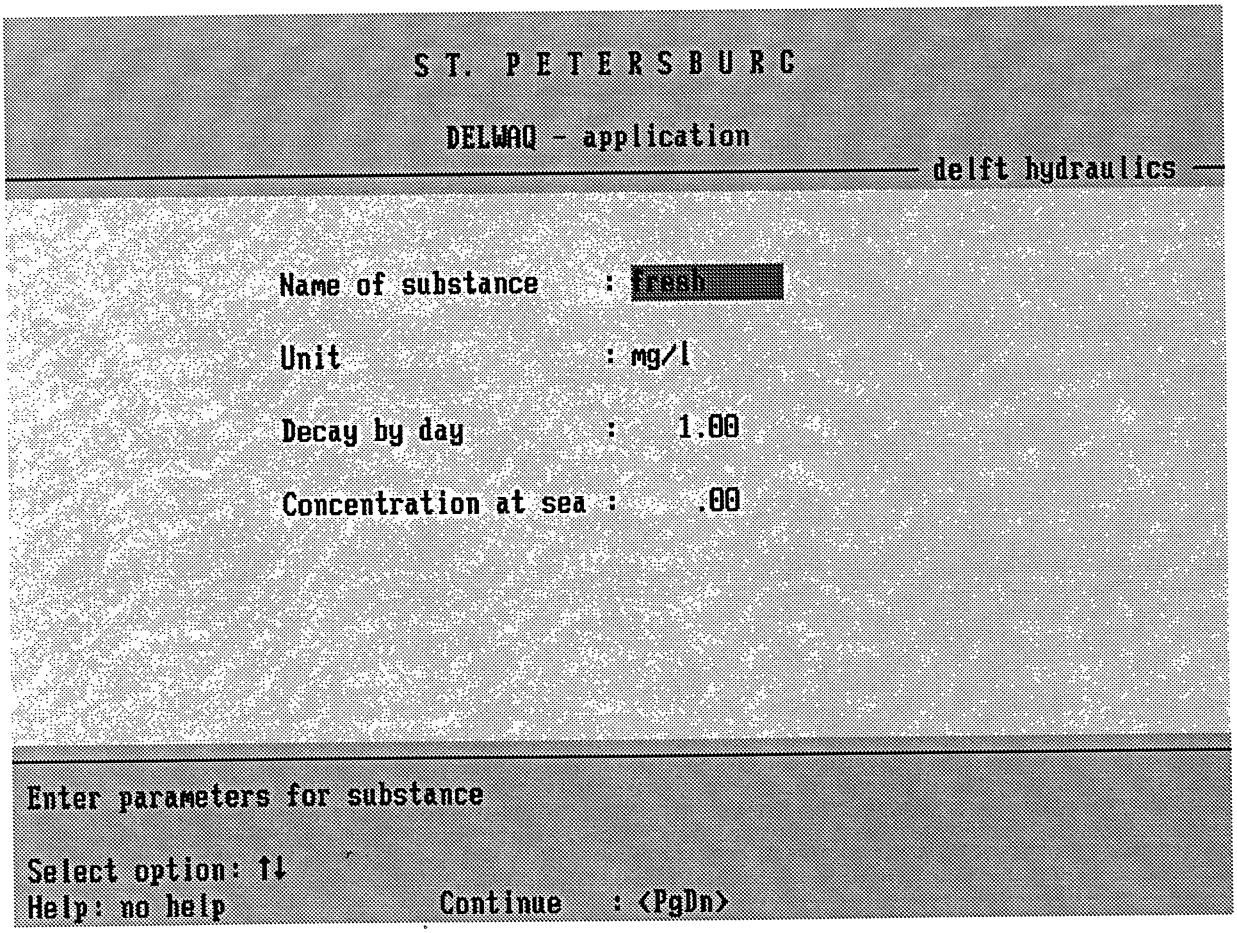

S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
About this DEMO (warranty)
Prepare input
Run the water quality model 'DELWAQ'
Show results
End of program
Main menu
Select option: ↑↓
Help: no help
Confirm choice: <Enter>

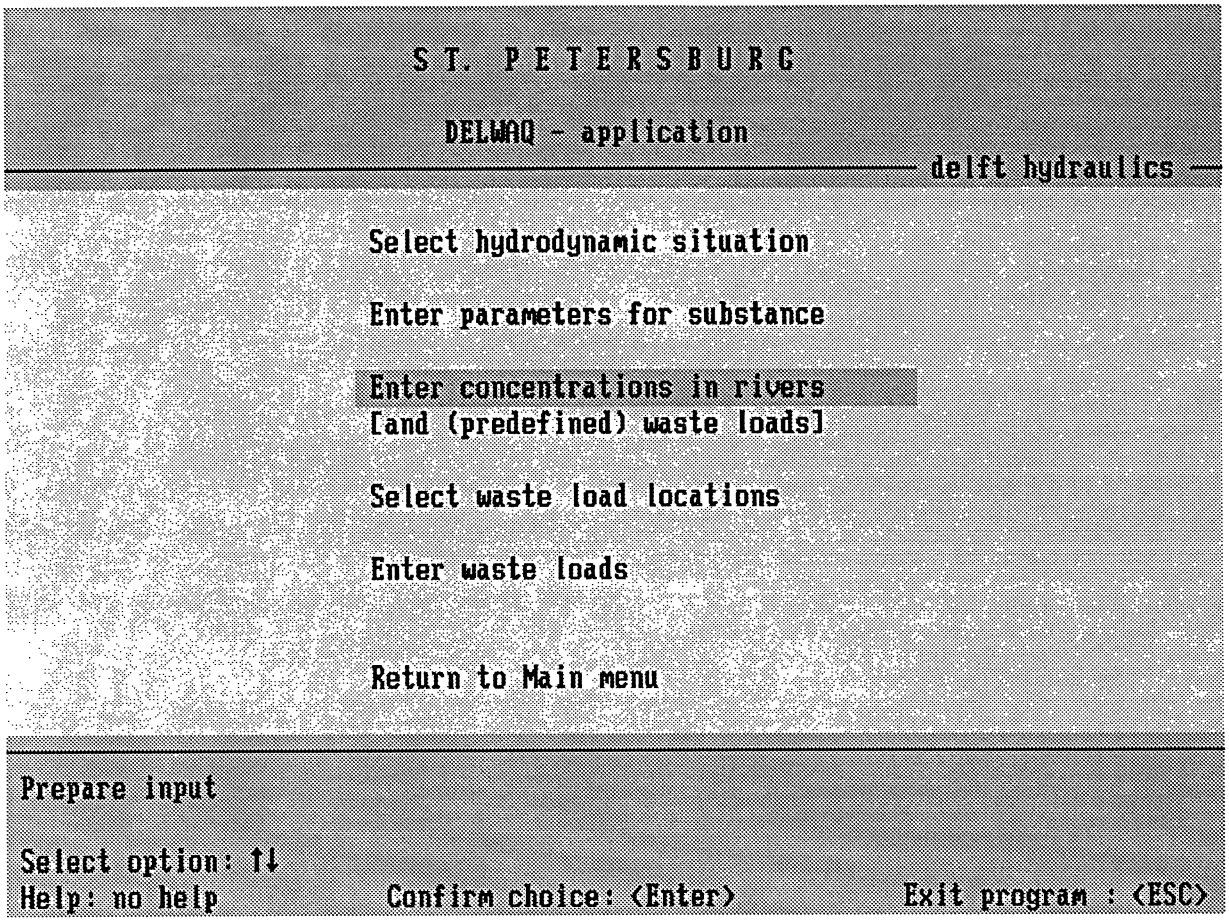

S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Select hydrodynamic situation
Enter parameters for substance
Enter concentrations in rivers
[and (predefined) waste loads]
Select waste load locations
Enter waste loads
Return to Main menu
Prepare input
Select option: ↑↓
Help: no help
Confirm choice: <Enter>
Exit program : <ESC>

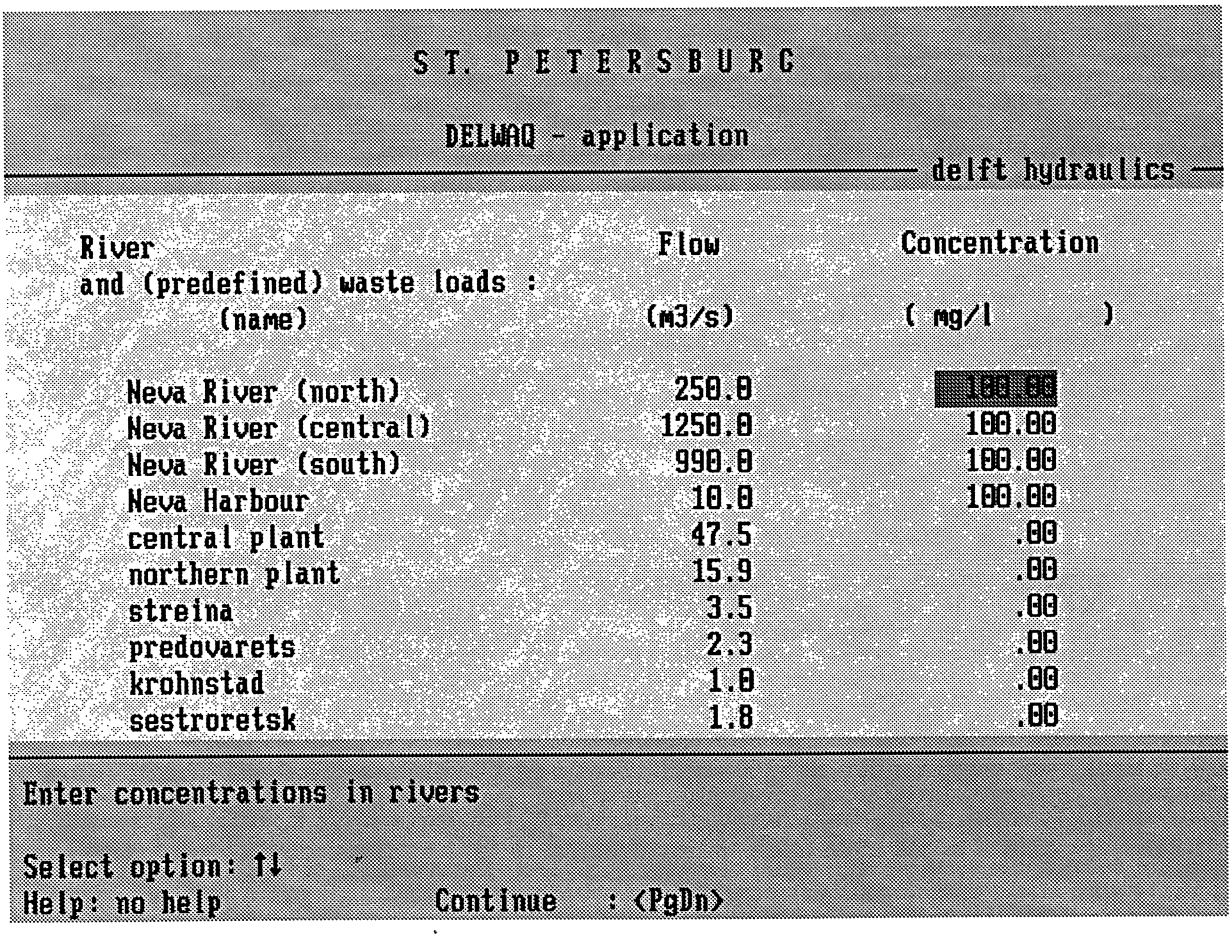

S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Possible hydrodynamic situations :
Final design
Present situation
Closed dam; except navigation opening
Two openings and navigation opening
Select hydrodynamic situation
Select option: ↑↓
Help: no help
Continue : <Enter>


S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Fill in dispersion coefficient or confirm with <Enter>
Dispersion coefficient : 5.00 m2/sec
Attention for running a dynamic calculation:
For a timestep of 10 minutes the maximum disp.coeff = 10 m2/s !!!
Dispersion
Select option: no
Help: no help
Confirm : <Enter>


S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Select hydrodynamic situation
Enter parameters for substance
Enter concentrations in rivers
[and (predefined) waste loads]
Select waste load locations
Enter waste loads
Return to Main menu
Prepare input
Select option: ↑↓
Help: no help
Confirm choice: <Enter>
Exit program : <ESC>


S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Name of substance : fresh
Unit : mg/l
Decay by day : 1.00
Concentration at sea : .00
Enter parameters for substance
Select option: ↑↓
Help: no help
Continue : <PgDn>


S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Select hydrodynamic situation
Enter parameters for substance
Enter concentrations in rivers
[and (predefined) waste loads]
Select waste load locations
Enter waste loads
Return to Main menu
Prepare input
Select option: ↑↓
Help: no help
Confirm choice: <Enter>
Exit program : <ESC>


S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
River and (predefined) waste loads : (name)
Flow (m3/s)
Concentration (mg/l)
Neva River (north) 250.0 100.00
Neva River (central) 1250.0 100.00
Neva River (south) 990.0 100.00
Neva Harbour 10.0 100.00
central plant 47.5 .00
northern plant 15.9 .00
streina 3.5 .00
predovarets 2.3 .00
krohnstad 1.0 .00
sestroretsk 1.8 .00
Enter concentrations in rivers
Select option: ↑↓
Help: no help
Continue : <PgDn>

S T. P E T E R S B U R G

DELWAQ - application — delft hydraulics

Select hydrodynamic situation

Enter parameters for substance

Enter concentrations in rivers
[and (predefined) waste loads]

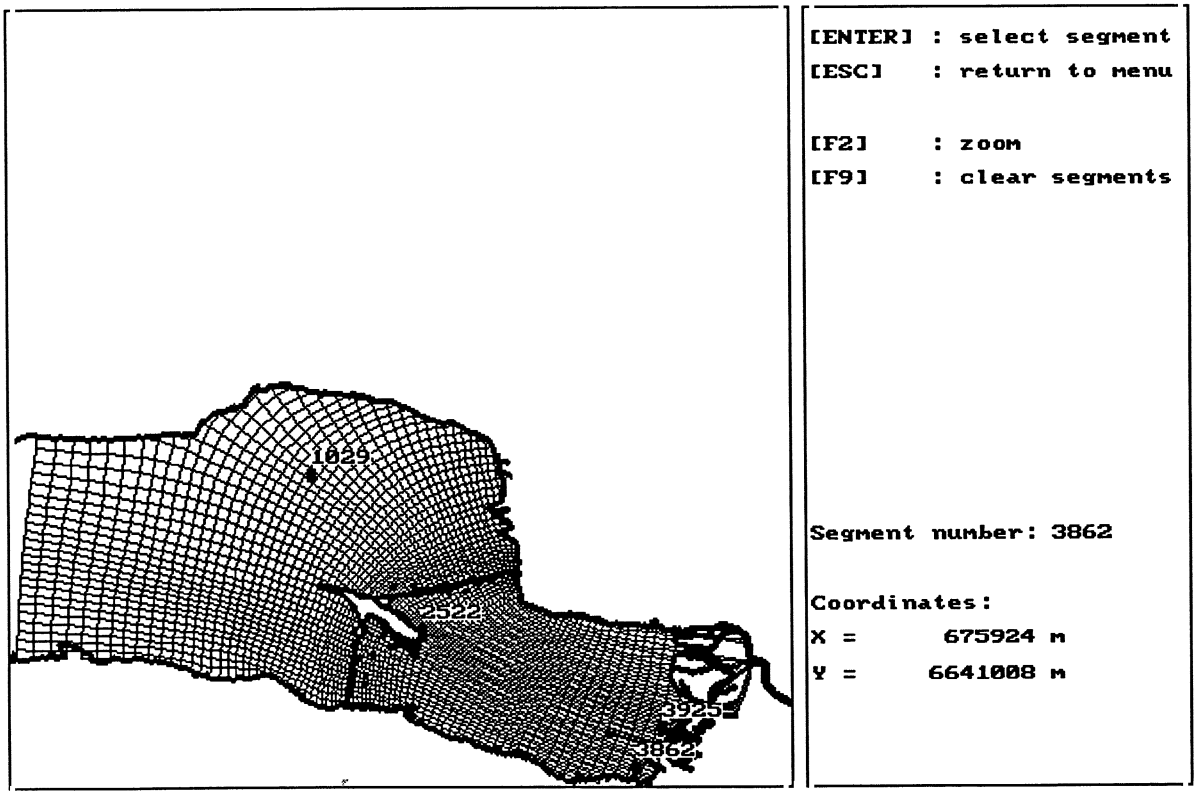
Select waste load locations

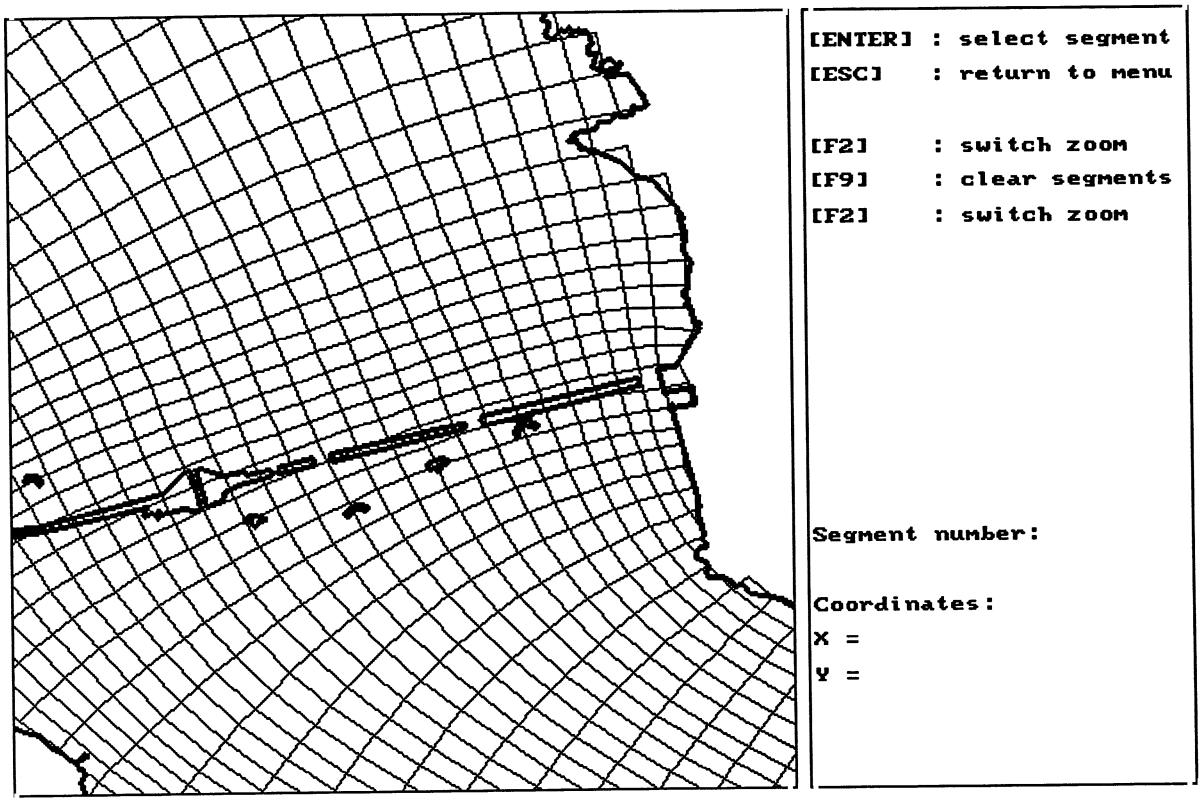
Enter waste loads

Return to Main menu

Prepare input

Select option: ↑↓
Help: no help Confirm choice: <Enter> Exit program : <ESC>





S T. P E T E R S B U R G

DELWAQ - application — delft hydraulics

Select hydrodynamic situation

Enter parameters for substance

Enter concentrations in rivers
[and (predefined) waste loads]

Select waste load locations

Enter waste loads

Return to Main menu

Prepare input

Select option: ↑↓
Help: no help Confirm choice: <Enter> Exit program : <ESC>

S T. P E T E R S B U R G

DELWAQ - application

delft hydraulics

Segment nr.	Flow (m3/s)	Unit (mg/l)	Segment nr.	Flow (m3/s)	Unit (mg/l)
1029	10.0	100.00	2522	10.0	100.00
3925	10.0	100.00	3862	10.0	100.00

Enter waste loads

Select option: ↑↓ or<Enter>
Help: no help Continue : <PgDn>

S T. P E T E R S B U R G

DELWAQ - application

delft hydraulics

Select hydrodynamic situation

Enter parameters for substance

Enter concentrations in rivers
[and (predefined) waste loads]

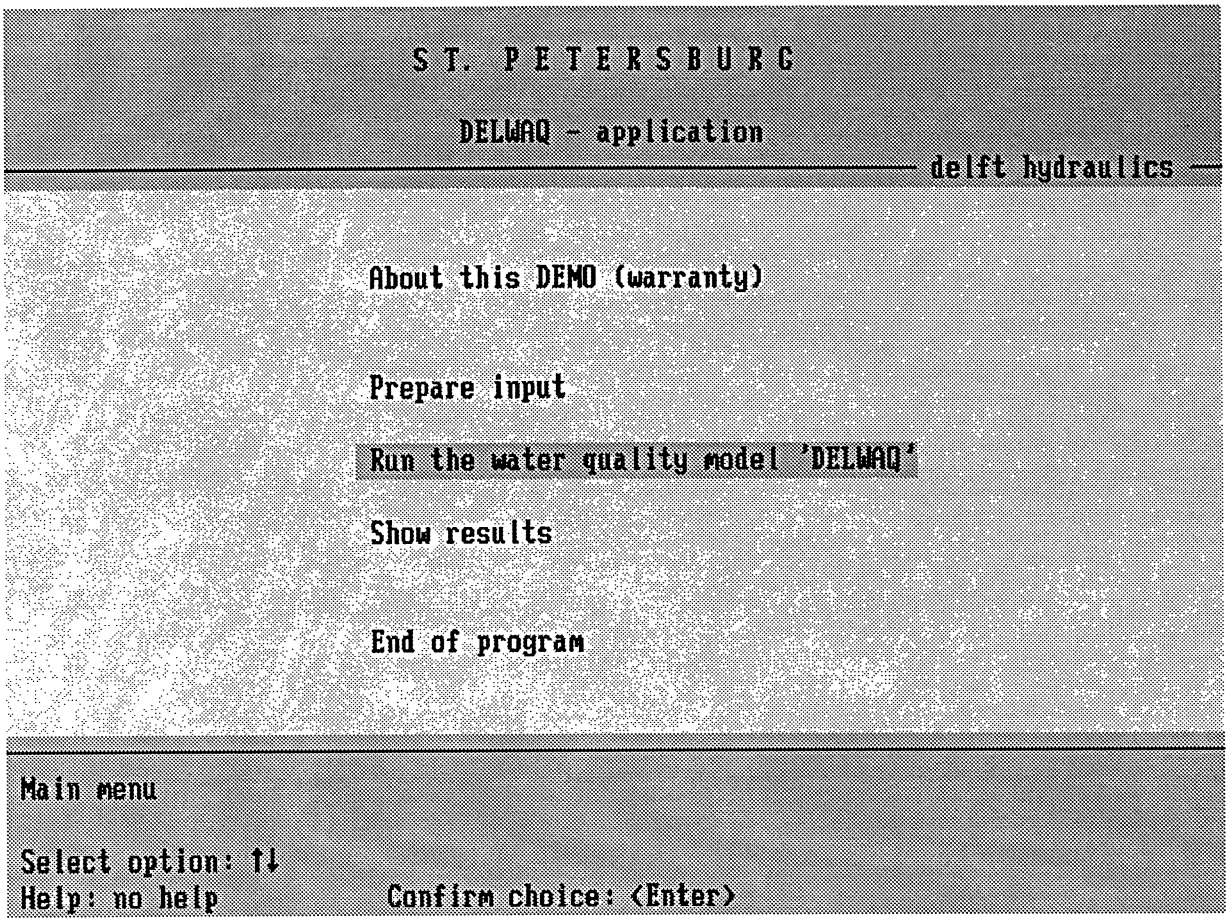
Select waste load locations

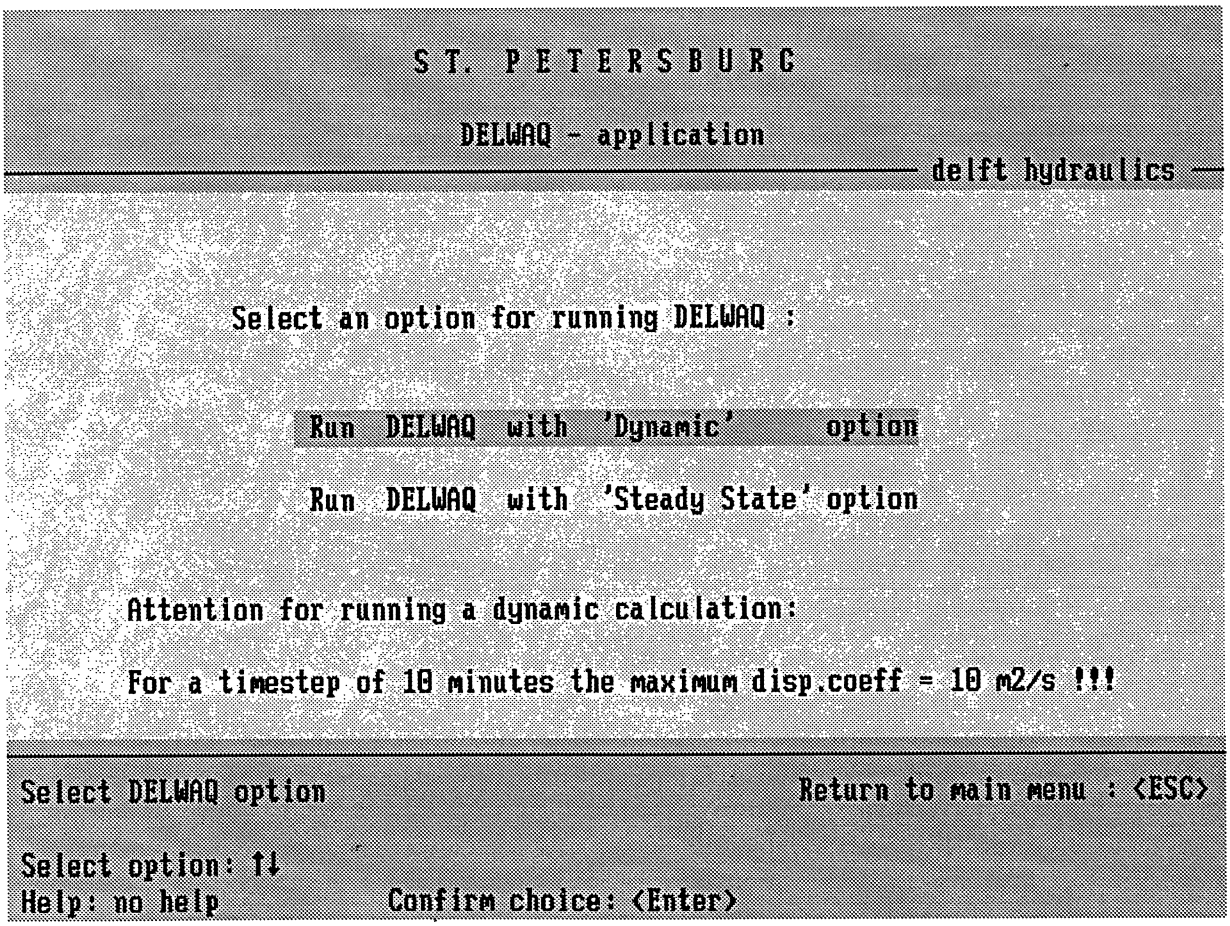
Enter waste loads

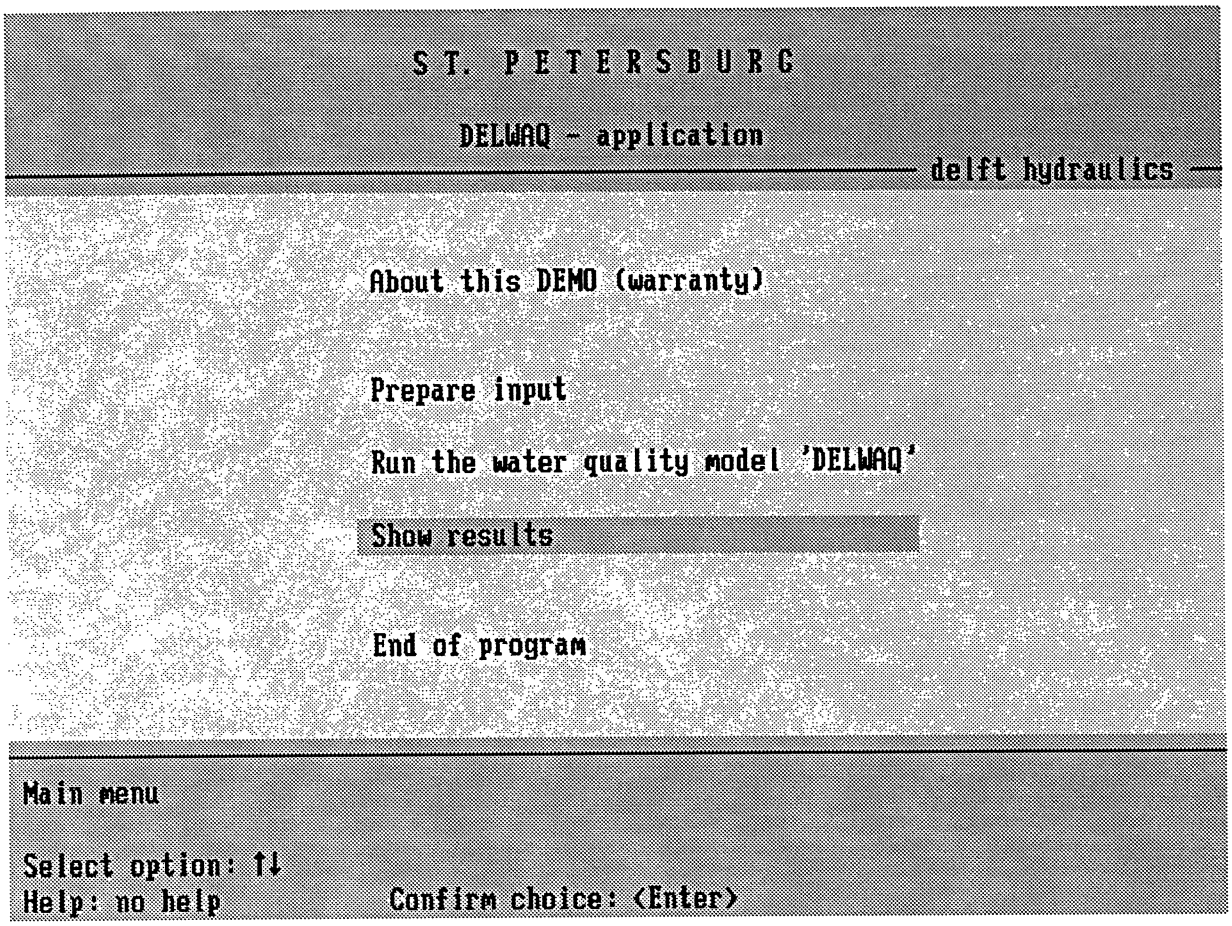
Return to Main menu

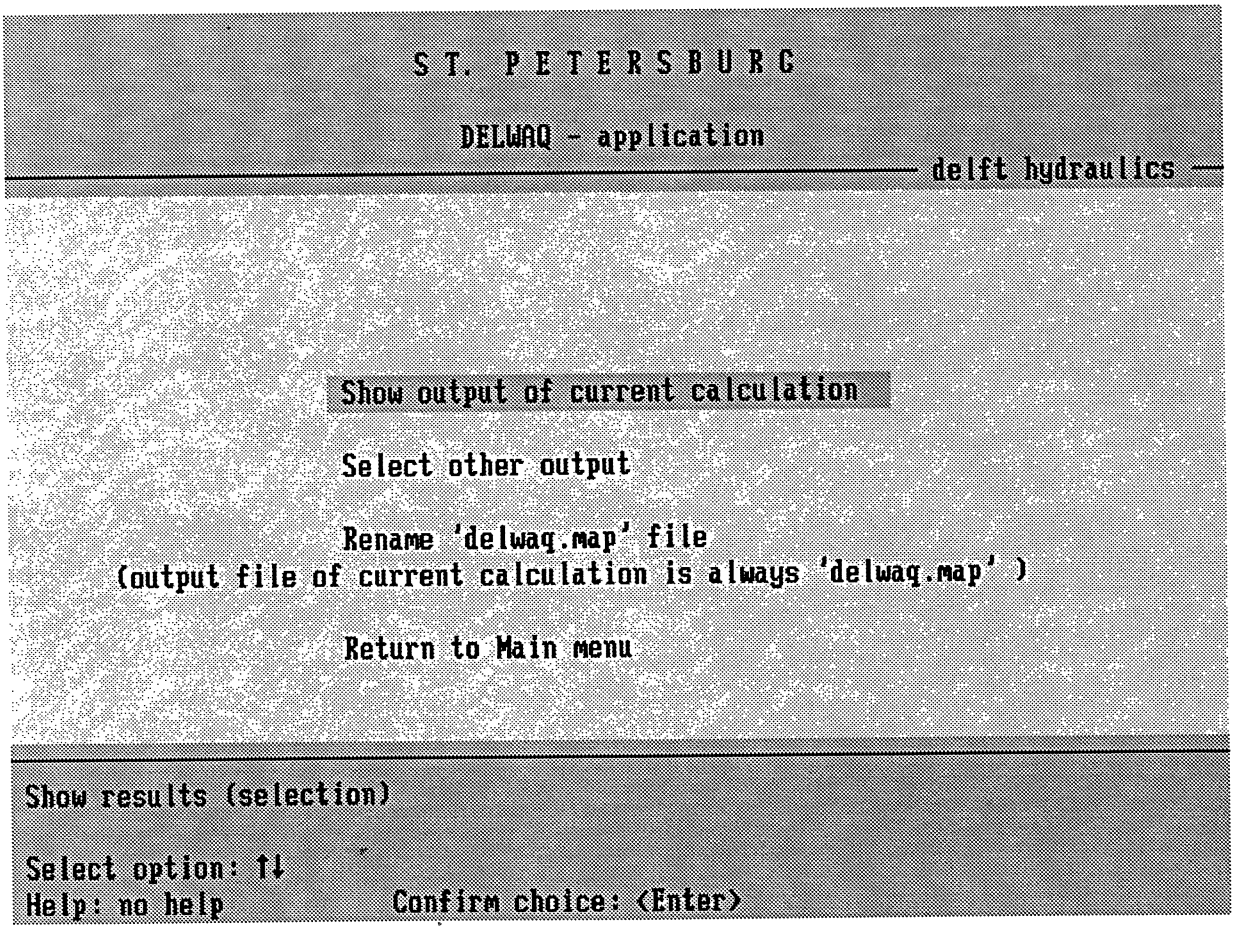
Prepare input

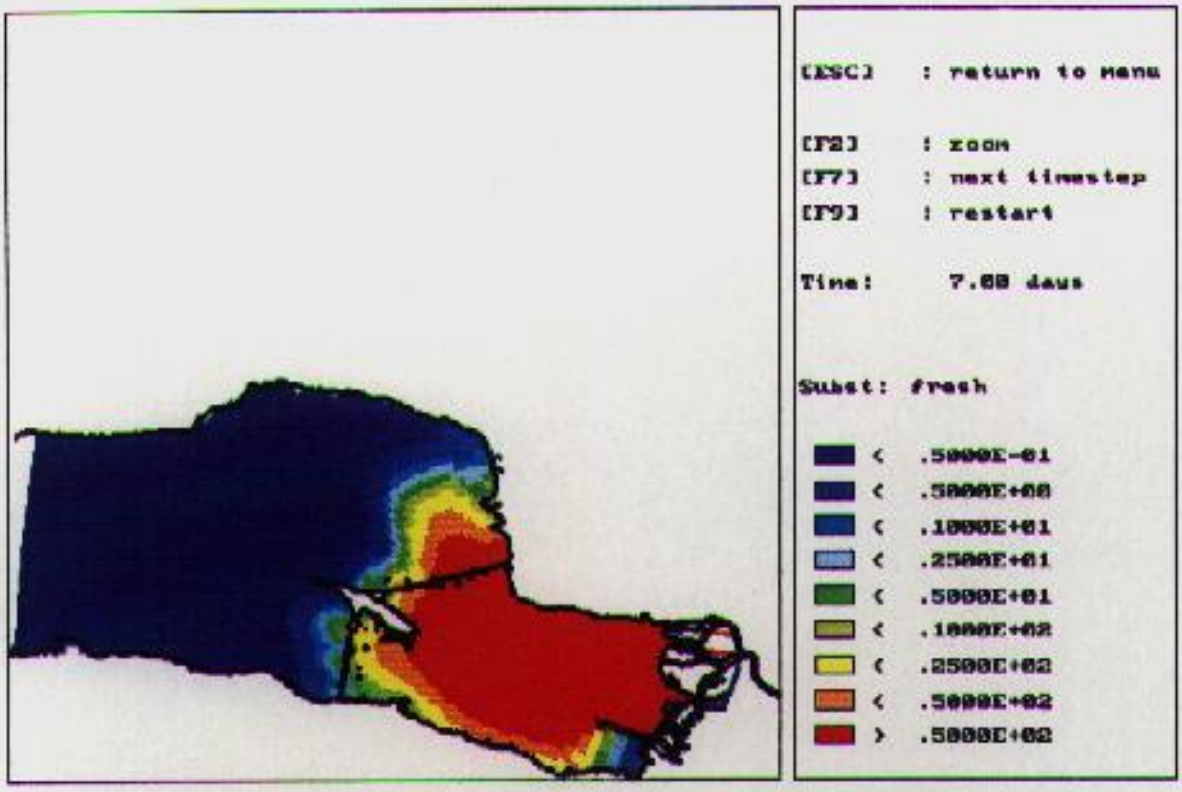
Select option: ↑↓
Help: no help Confirm choice: <Enter> Exit program : <ESC>

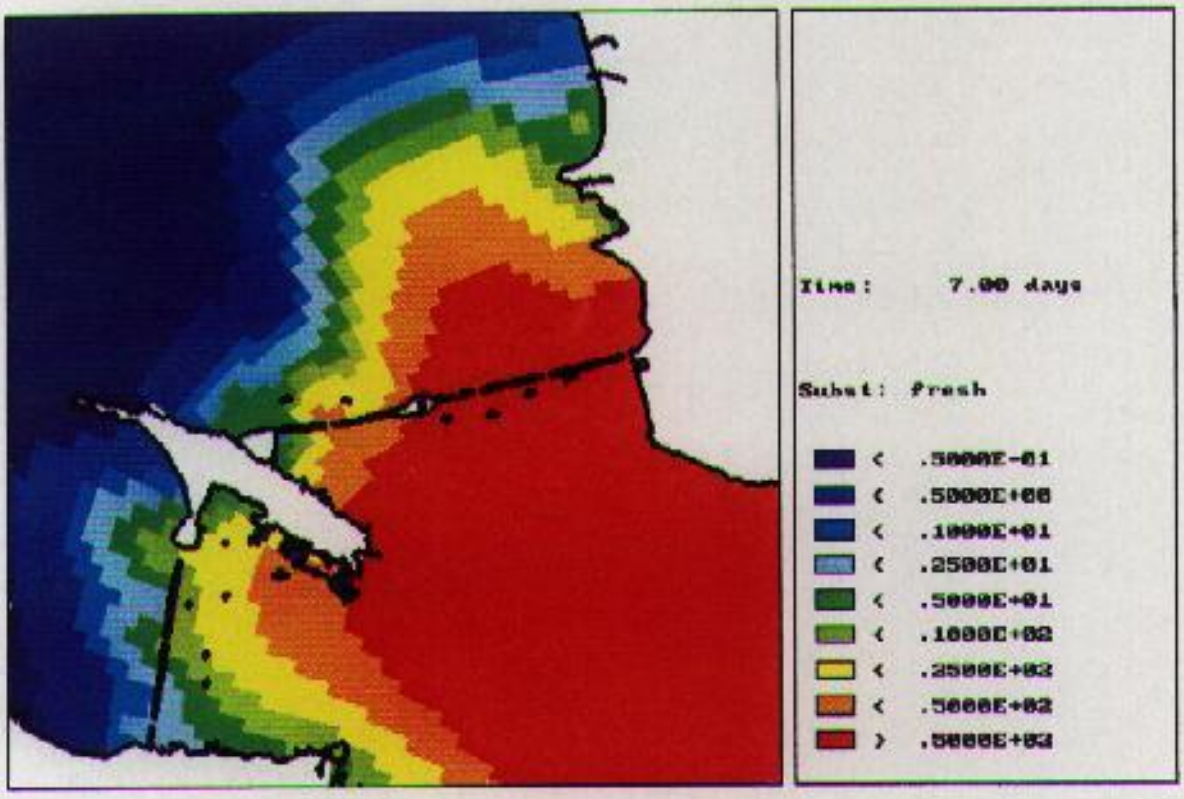

S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
About this DEMO (warranty)
Prepare input
Run the water quality model 'DELWAQ'
Show results
End of program
Main menu
Select option: ↑↓
Help: no help
Confirm choice: <Enter>

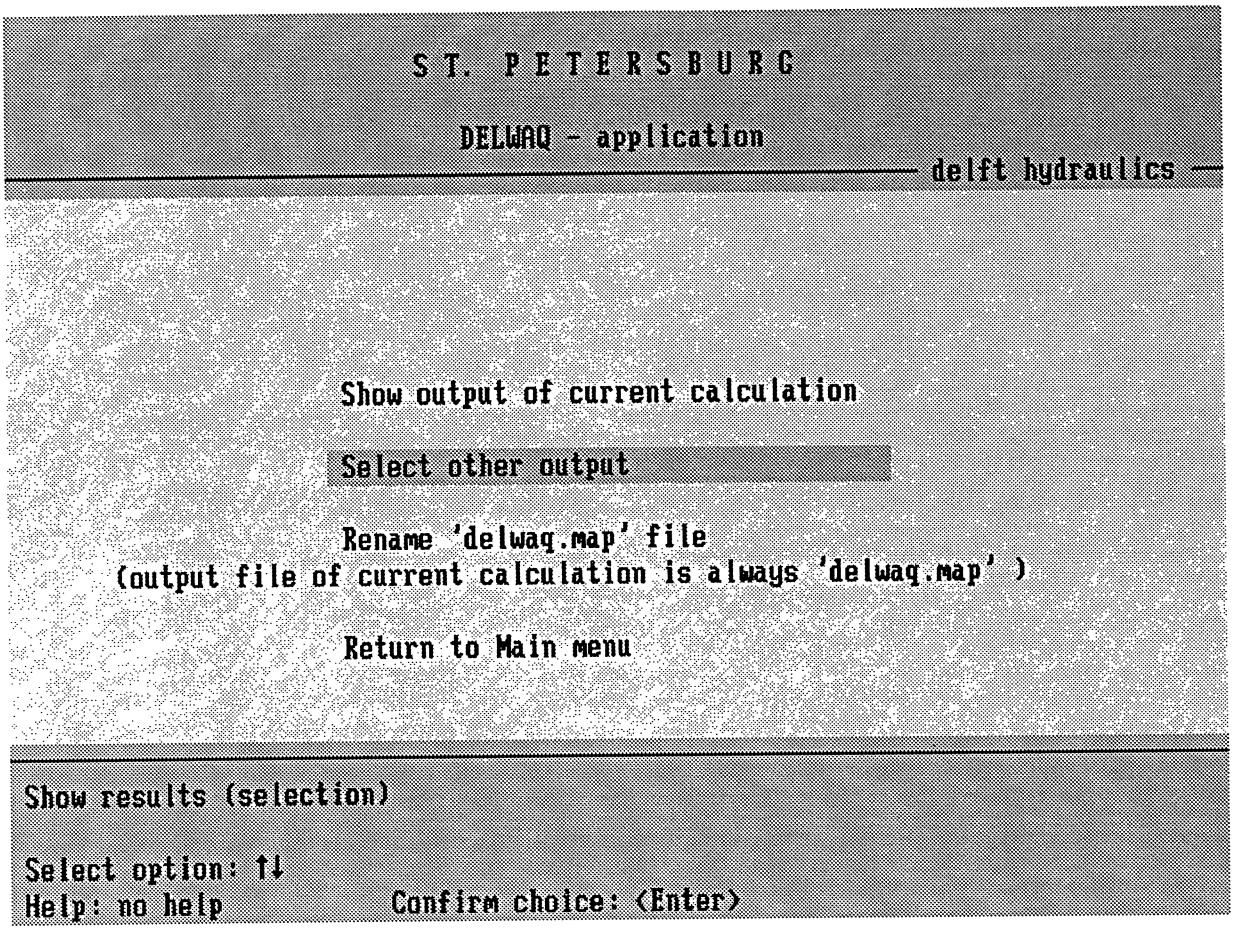

S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Select an option for running DELWAQ :
Run DELWAQ with 'Dynamic' option
Run DELWAQ with 'Steady State' option
Attention for running a dynamic calculation:
For a timestep of 10 minutes the maximum disp.coeff = 10 m2/s !!!
Select DELWAQ option
Return to main menu : <ESC>
Select option: ↑↓
Help: no help
Confirm choice: <Enter>

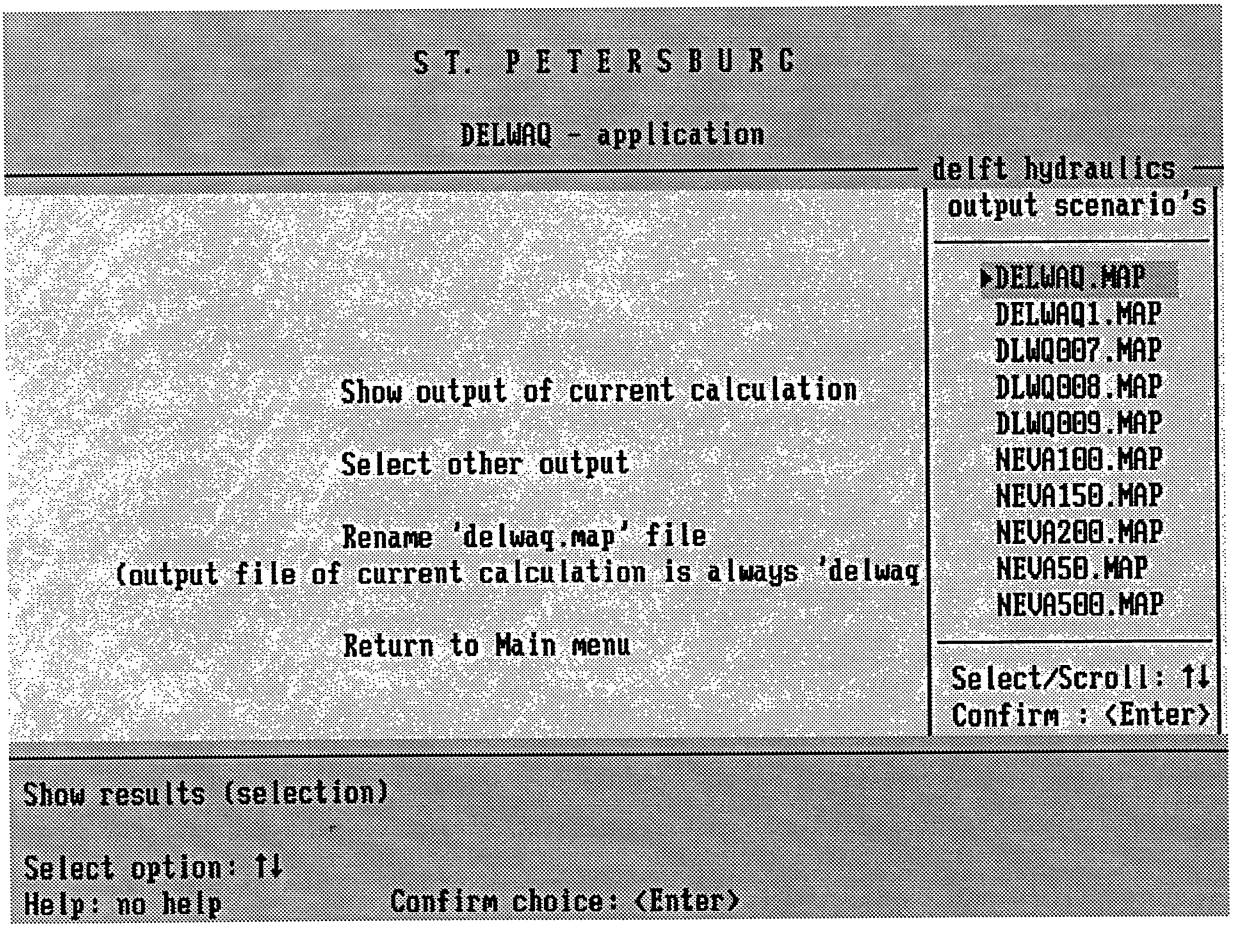

S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
About this DEMO (warranty)
Prepare input
Run the water quality model 'DELWAQ'
Show results
End of program
Main menu
Select option: ↑↓
Help: no help
Confirm choice: <Enter>

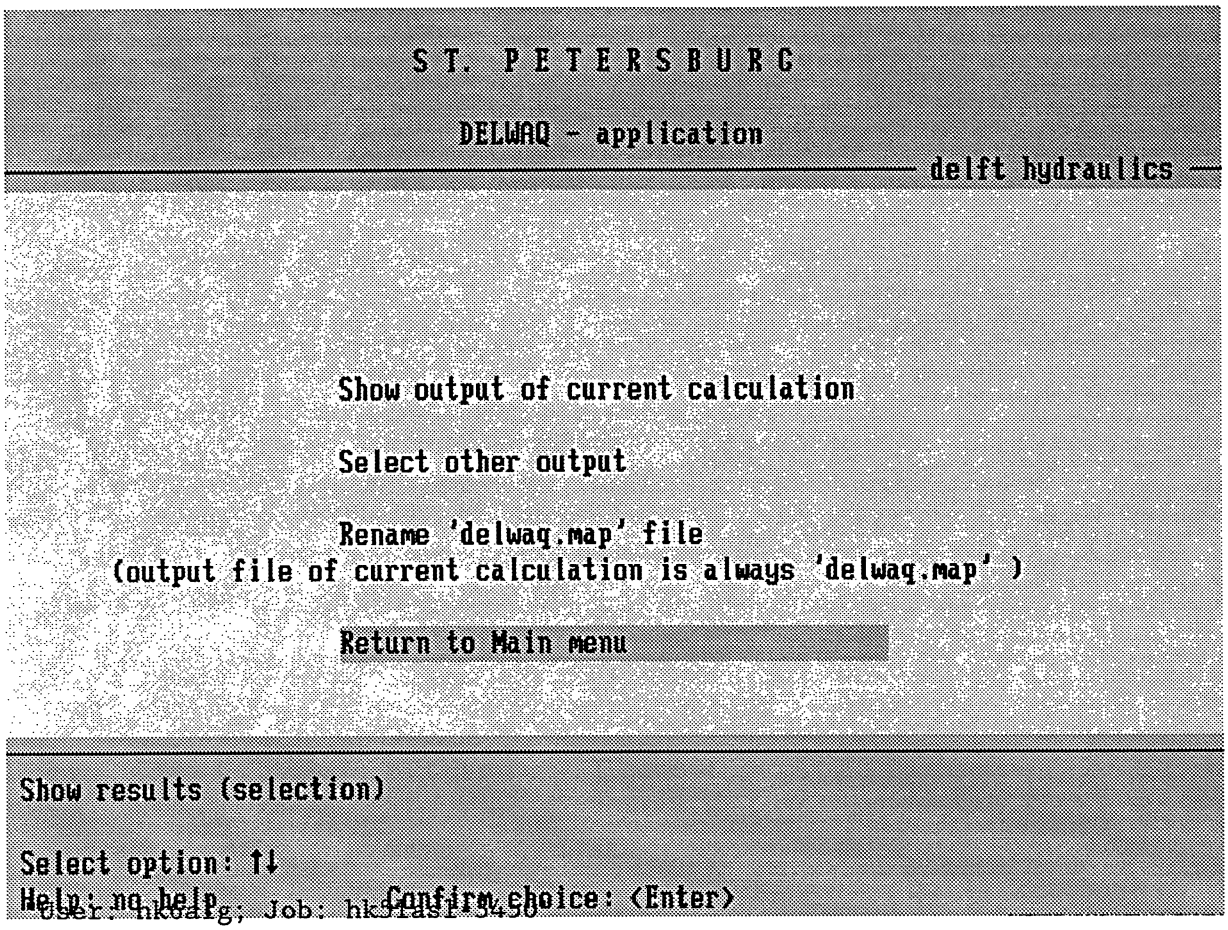

S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Show output of current calculation
Select other output
Rename 'delwaq.map' file
(output file of current calculation is always 'delwaq.map')
Return to Main menu
Show results (selection)
Select option: ↑↓
Help: no help
Confirm choice: <Enter>

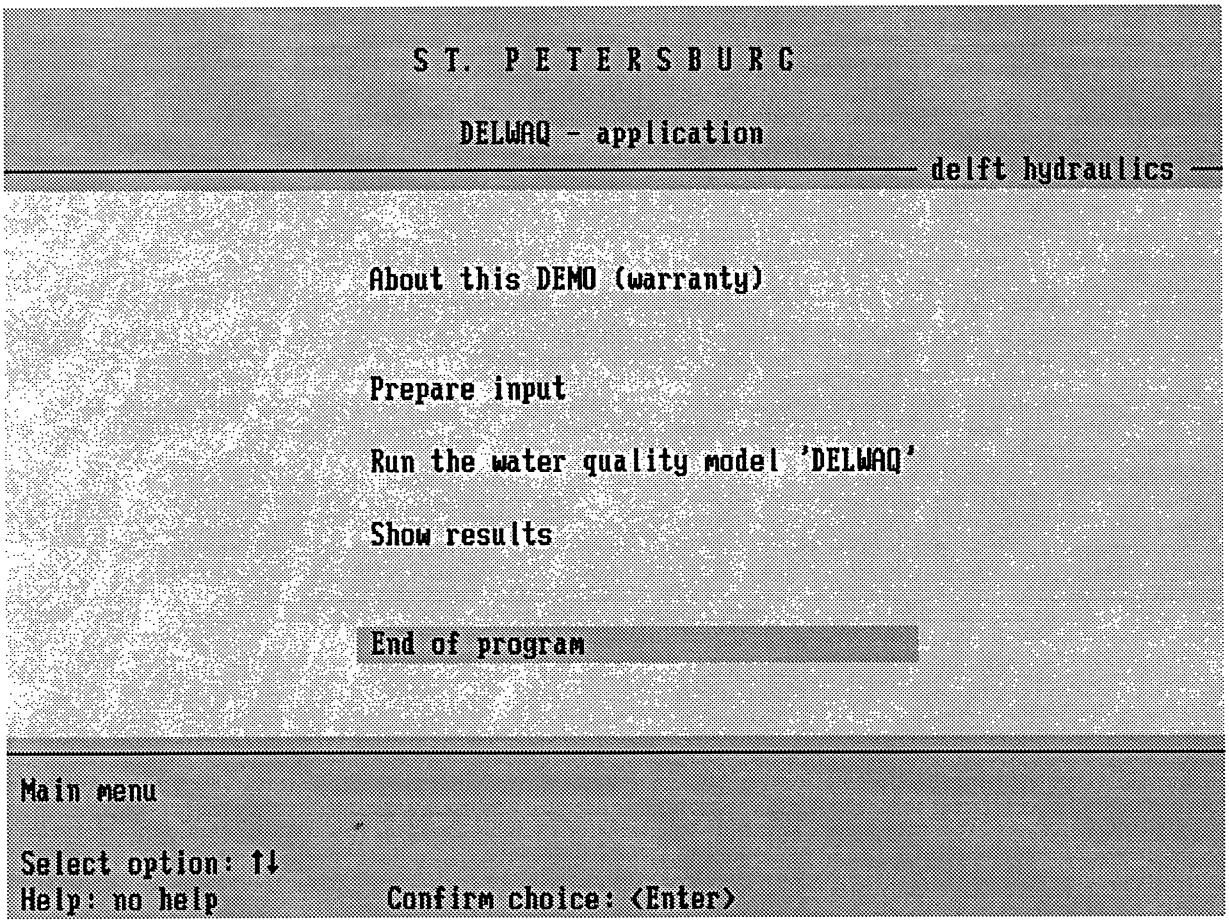

[ESC] : return to menu
[F2] : zoom
[F7] : next timestep
[F9] : restart
Time: 7.00 days
Subst: fresh
< .5000E-01
< .5000E+00
< .1000E+01
< .2500E+01
< .5000E+01
< .1000E+02
< .2500E+02
< .5000E+02
> .5000E+02

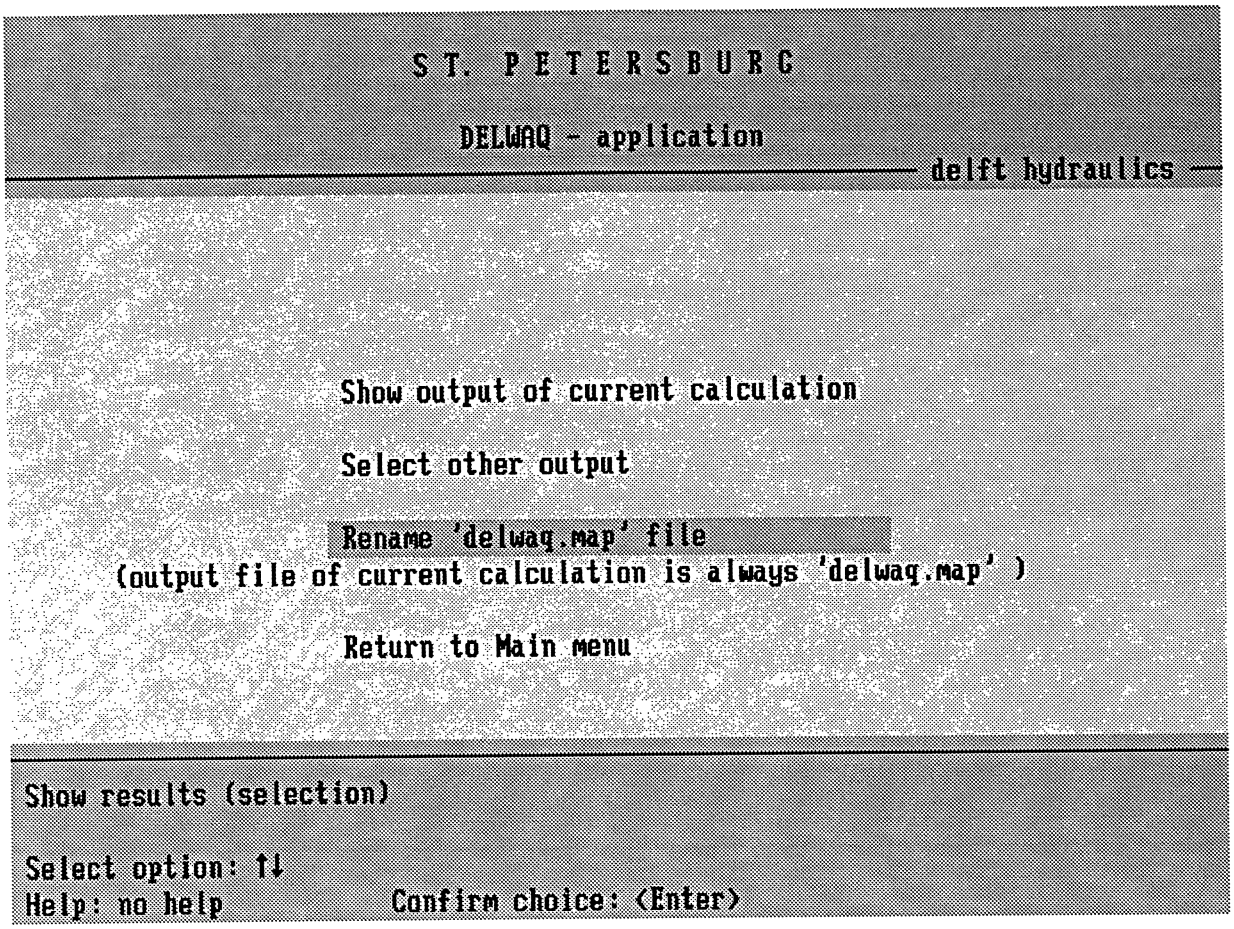

Time: 7.00 days
Subst: fresh
< .5000E-01
< .5000E+00
< .1000E+01
< .2500E+01
< .5000E+01
< .1000E+02
< .2500E+02
< .5000E+02
> .5000E+02

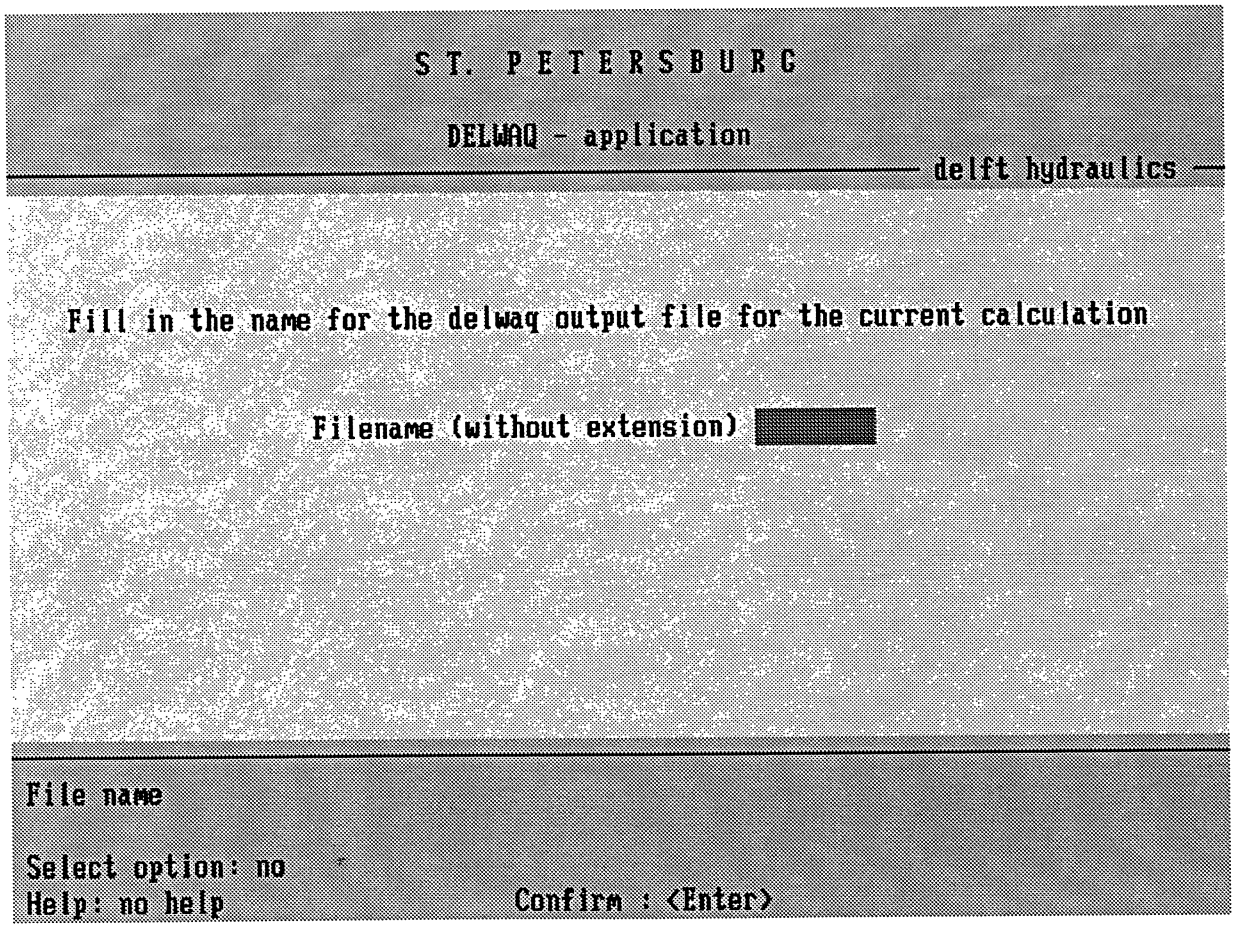

S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Show output of current calculation
Select other output
Rename 'delwaq.map' file
(output file of current calculation is always 'delwaq.map')
Return to Main menu
Show results (selection)
Select option: ↑↓
Help: no help
Confirm choice: <Enter>


S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
output scenario's
DELWAQ.MAP
DELWAQ1.MAP
DLWQ007.MAP
DLWQ008.MAP
DLWQ009.MAP
NEVA100.MAP
NEVA150.MAP
NEVA200.MAP
NEVA50.MAP
NEVA500.MAP
Select/Scroll: ↑↓
Confirm : <Enter>
Show output of current calculation
Select other output
Rename 'delwaq.map' file
(output file of current calculation is always 'delwaq
Return to Main menu
Show results (selection)
Select option: ↑↓
Help: no help
Confirm choice: <Enter>


S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Show output of current calculation
Select other output
Rename 'delwaq.map' file
(output file of current calculation is always 'delwaq.map')
Return to Main menu
Show results (selection)
Select option: ↑↓
Help: no help
Confirm choice: <Enter>


S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
About this DEMO (warranty)
Prepare input
Run the water quality model 'DELWAQ'
Show results
End of program
Main menu
Select option: ↑↓
Help: no help
Confirm choice: <Enter>


S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Show output of current calculation
Select other output
Rename 'delwaq.map' file
(output file of current calculation is always 'delwaq.map')
Return to Main menu
Show results (selection)
Select option: ↑↓
Help: no help
Confirm choice: <Enter>


S T. P E T E R S B U R G
DELWAQ - application
delft hydraulics
Fill in the name for the delwaq output file for the current calculation
Filename (without extension)
File name
Select option: no
Help: no help
Confirm : <Enter>