

# Briefly about Kyrgyzstan

Situated in Central Asia and before 1991 was one of the Soviet Union Republics

Total area of Kyrgyzstan is 199,951 km<sup>2</sup> (95% - mountains)

The population is about 6,389 million

Currency – Som (KGS)

Ethnic groups:

- Kyrgyz - 72.6%
- Uzbek - 14.4%
- Russian - 6.4%
- Dungan - 1.1%
- Others - 5.5%

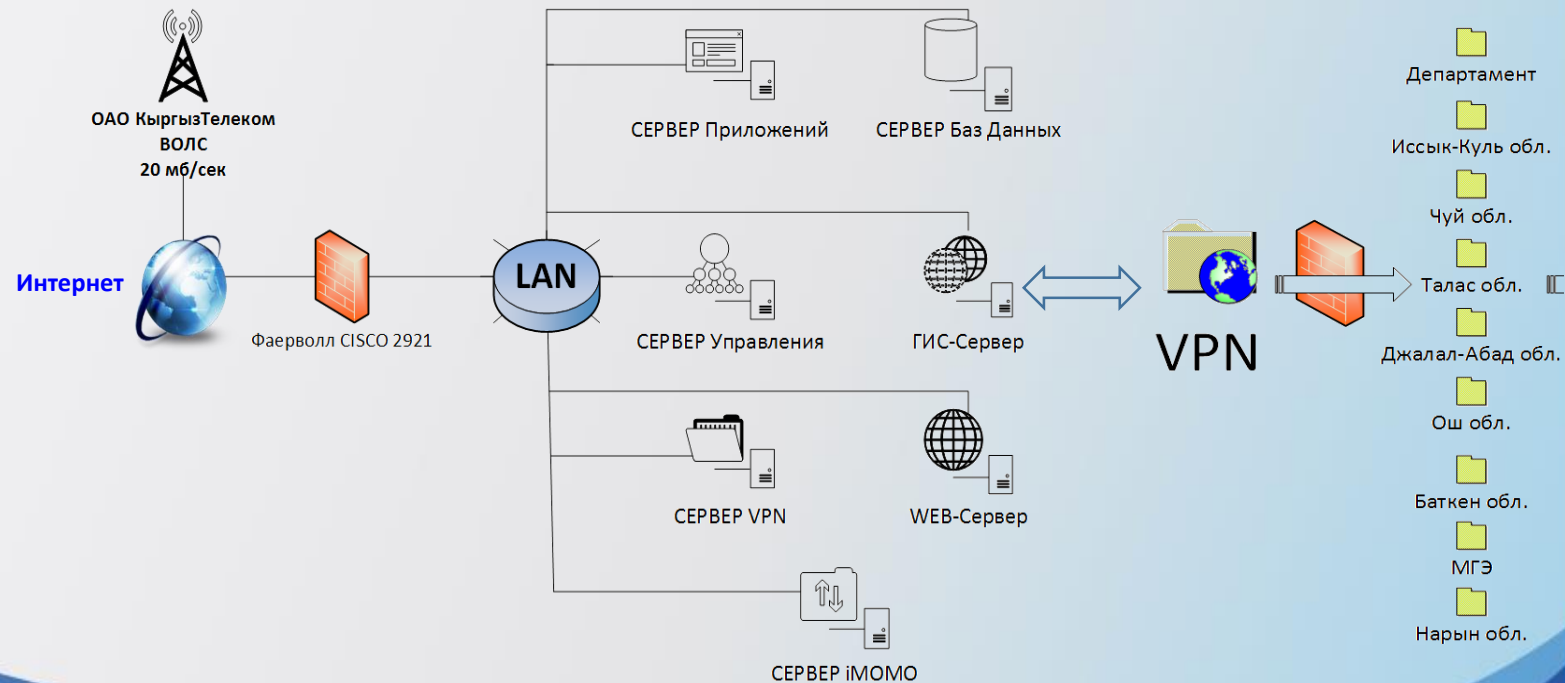




# National Water Resources Management on Implementation of Water Information System (WIS)

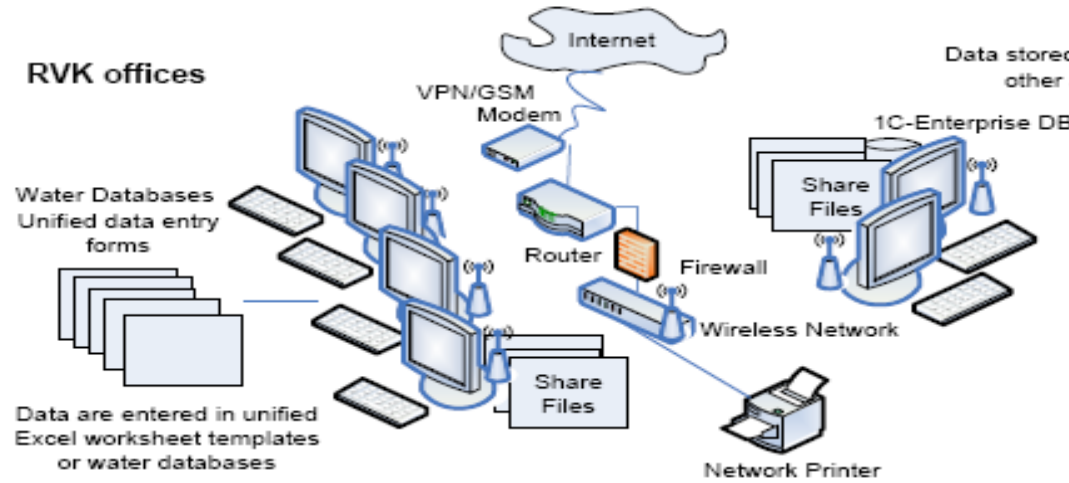
by Azamat Karypov  
Coordinator of WIS  
Bishkek, Kyrgyzstan  
[water.gov.kg](http://water.gov.kg)

October, 2019

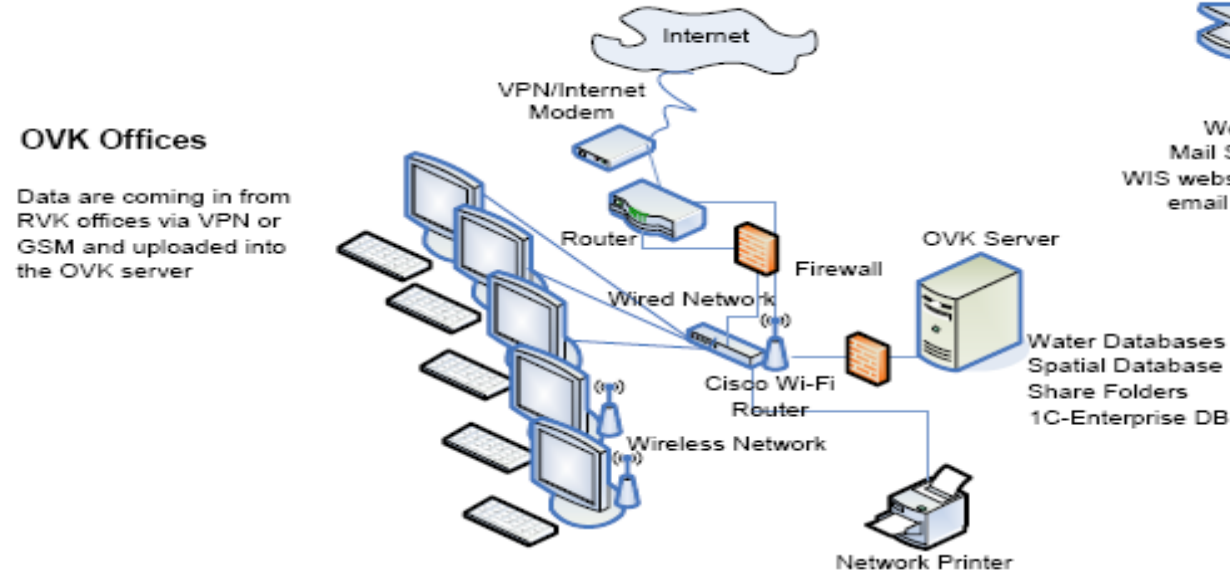


# WIS Framework

## RVK offices

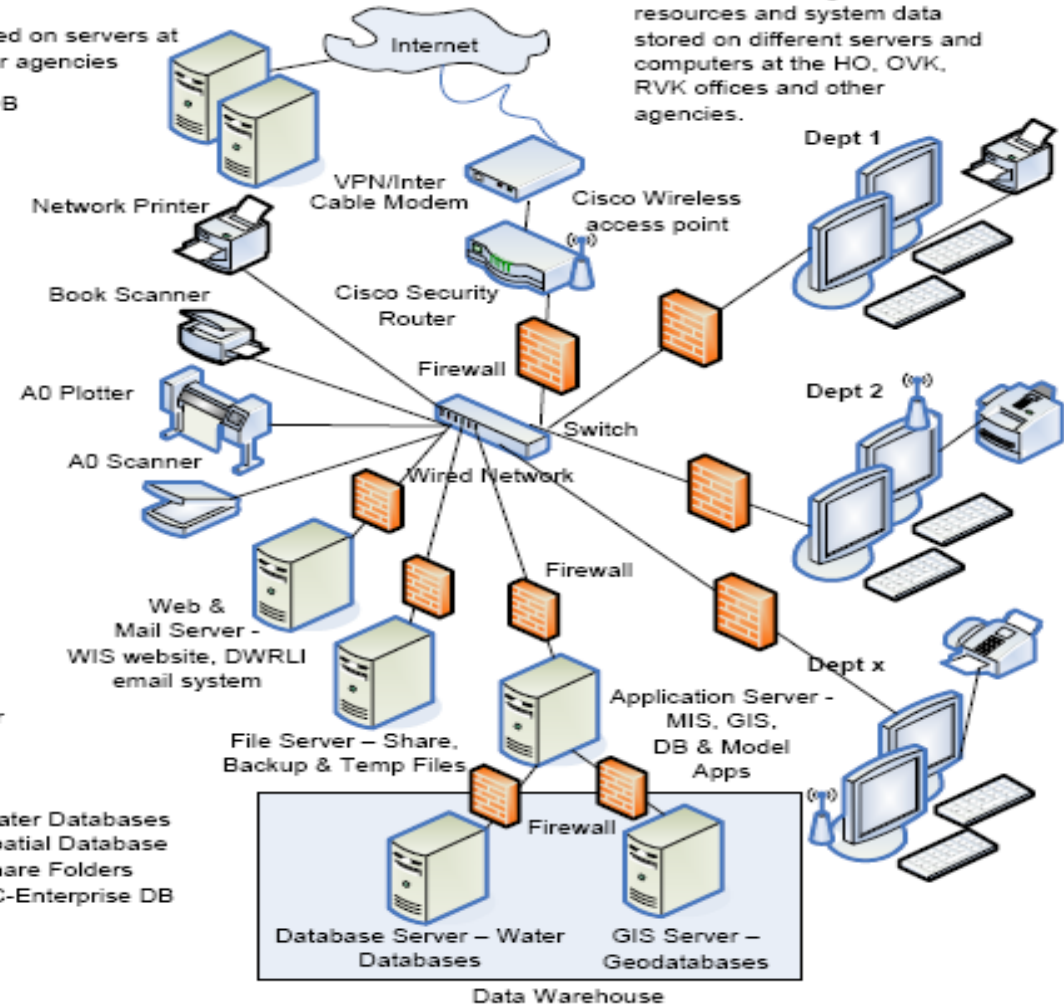


## OVK Offices

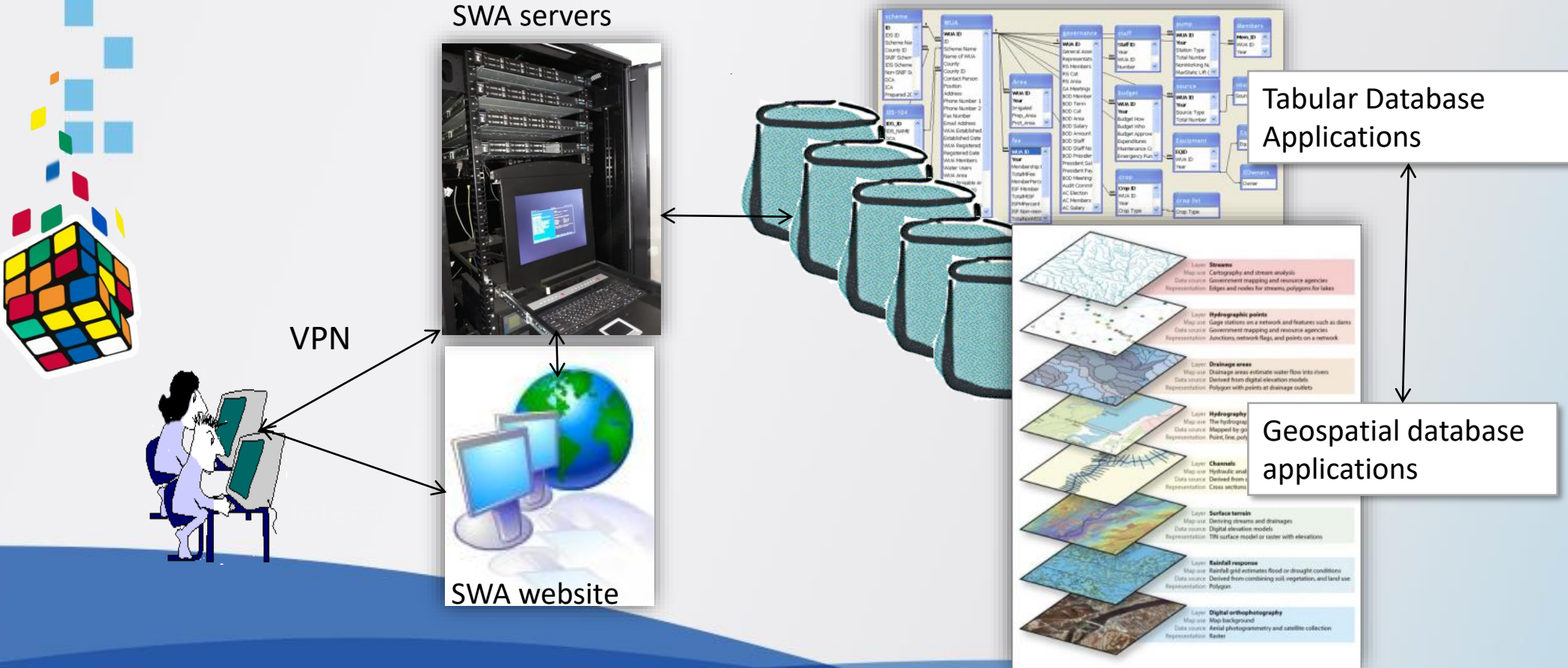


## DWRLI/SWA HO

WIS with the ability to query, retrieve, and integrate water resources and system data stored on different servers and computers at the HO, OVK, RVK offices and other agencies.



# Establishing a digital Water Information System (WIS) with online tabular and geospatial database applications accessible via the SWA website and/or VPN.



# WIS current status

<https://water.gov.kg>

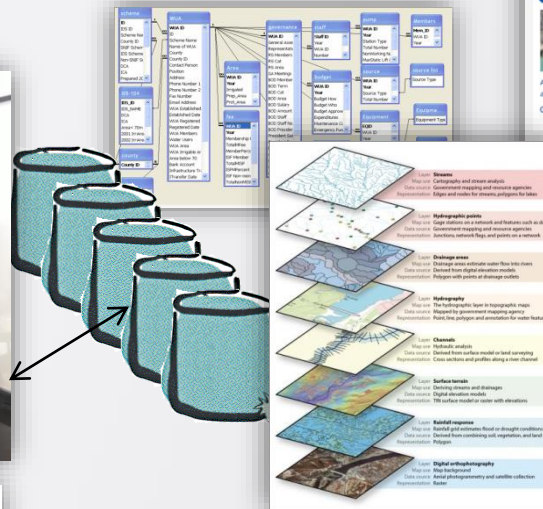


DWRLI servers



VPN

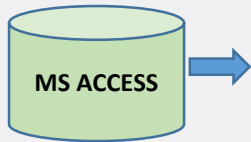
Internet



Database applications	Web mapping services	Management tools
Water quantity		
Irrigation water use		
Hydro-technical structure (HTS)		
National water use		
Water users association (WUA)		

- 5 online database applications – water quantity, irrigation water use, Hydro-technical structure, national water use, and water users association.
- 2 online web mapping services with over 100+ spatial layers & 40+ thematic maps
- One demonstration under the management tools and two more under development
- Books with 701 scanned documents and eMaps with 38 scanned raster image files.

# 5 ON-LINE DATABASE SYSTEM



WUA DB



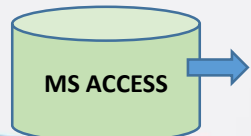
Monitoring of Water Resources DB



Water Use DB



Technical Passport DB



State Water cadastre

## Status

Developed online database.

Developed online database, access is provided by IAS under the DWRLI and regional units

Developed online database.

Developed online database.

Developed online database.

## Action

Training and implementation in the WUA. Support Units

Further technical support

Training and implementation in the RVK and OVK

Training and implementation in the RVK and OVK

Training and implementation in the RVK and OVK

## Output

ON-LINE DB  
<http://wua.water.gov.kg>

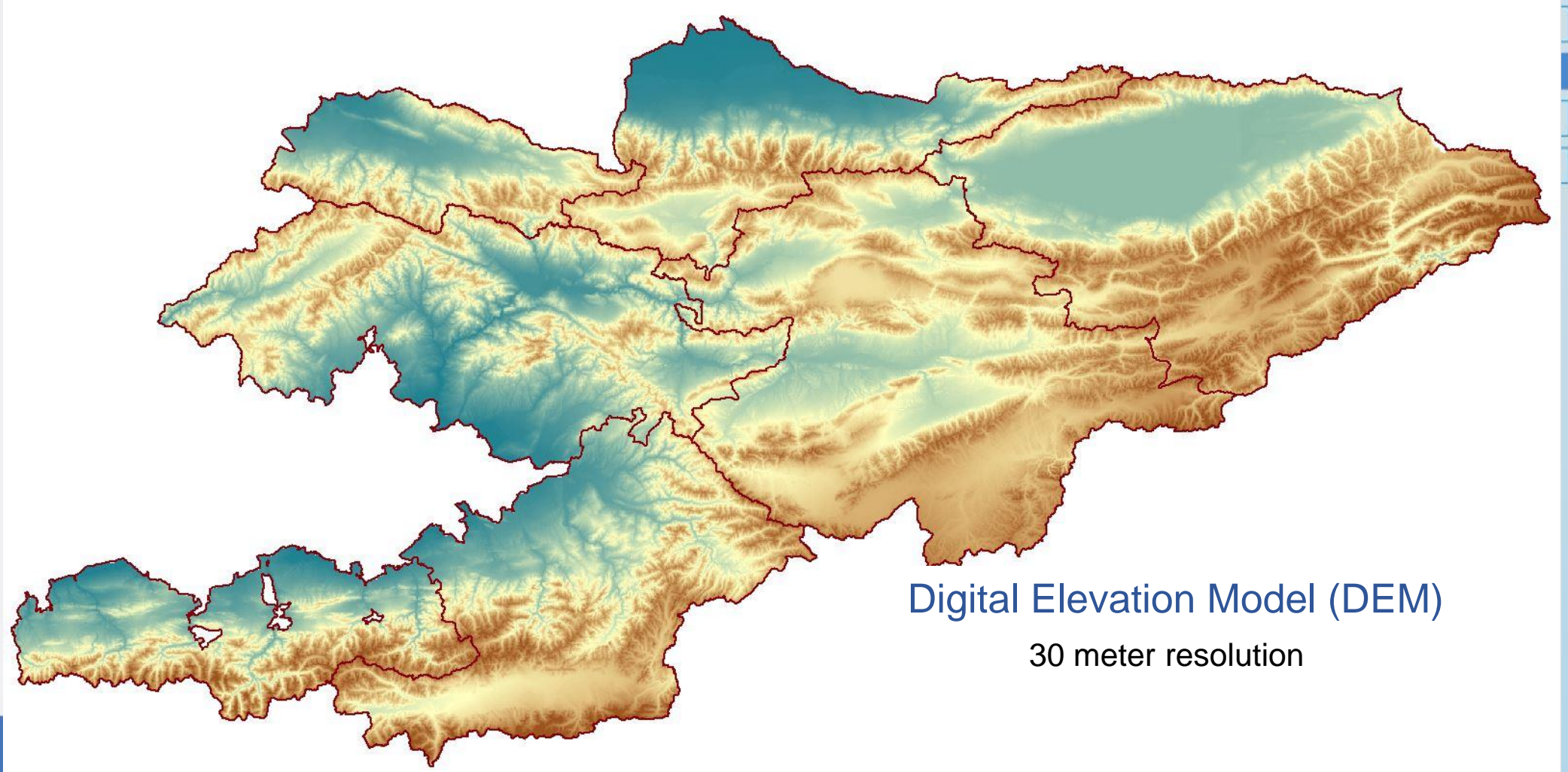
ON-LINE DB  
<http://indicators.water.gov.kg>

ON-LINE DB  
<http://wuse.water.gov.kg>

ON-LINE DB  
<http://passport.water.gov.kg>

ON-LINE DB  
<http://2tp.water.gov.kg>

# GEO DATABASE



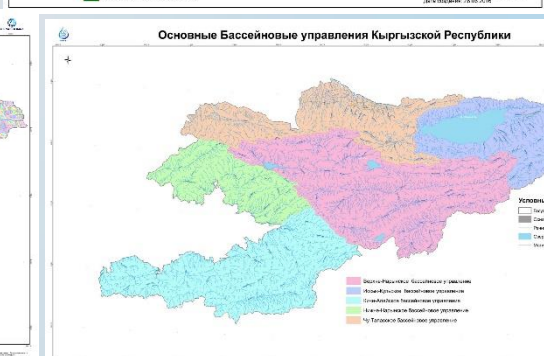
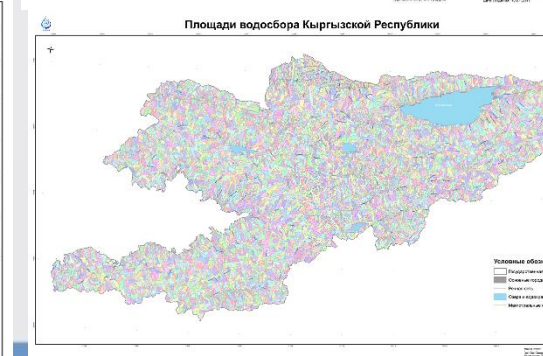
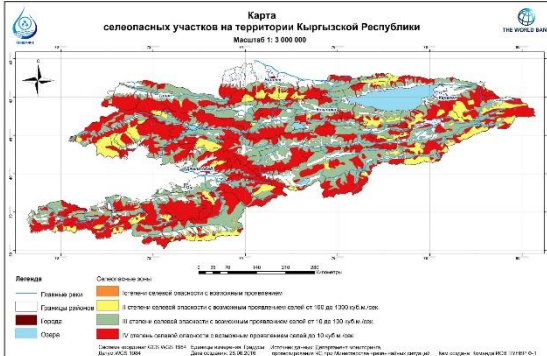
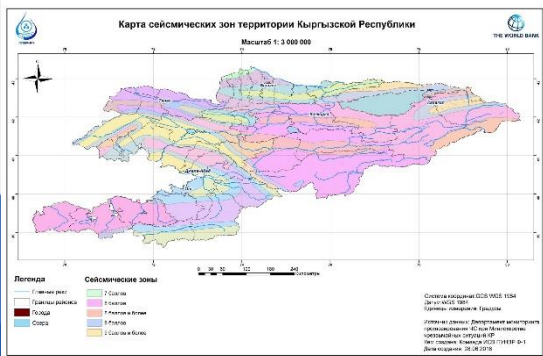
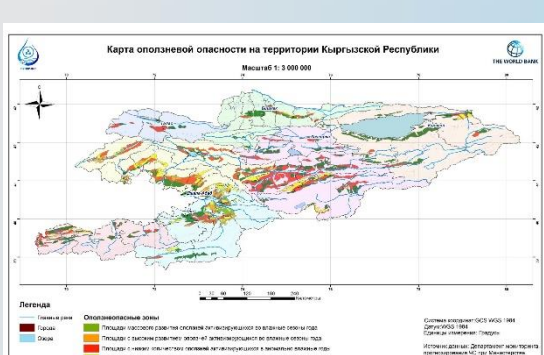
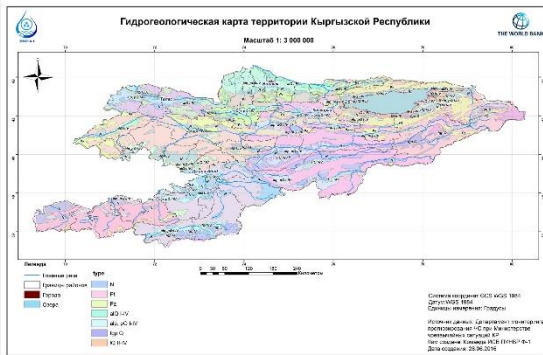
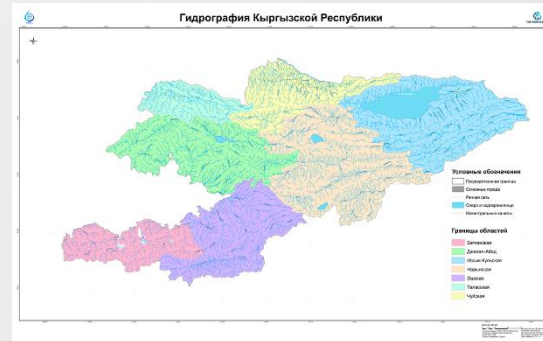
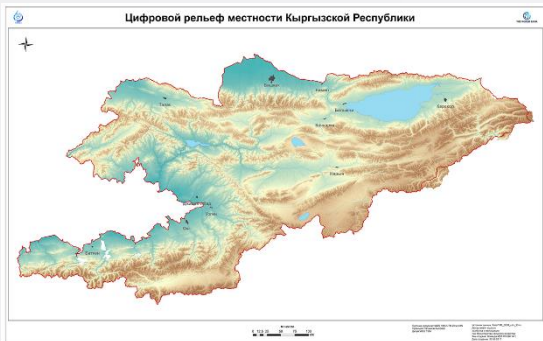
- KG\_WIS\_2018.gdb
  - Administrative
    - Border\_Aiylaimak\_KG
    - Border\_Country\_KG
    - Border\_Country\_KG\_Line
    - Border\_District\_KG
    - Border\_Oblast\_KG
    - Cities\_KG
    - District\_Centers\_KG
    - Main\_City\_KG
    - Offices\_DWRLI
    - Settlements\_Aiylaimak\_KG
    - Settlements\_Main\_KG
    - Settlements\_Point\_KG
    - Settlements\_Poly\_KG
  - Disasters
    - Avalanches\_KG
    - GW\_Flood\_Zones\_KG
    - Landslides\_KG
    - Mudflow\_KG
    - Rockfalls\_KG
    - Seismic\_Zones\_KG
    - Soil\_Erosion\_KG
  - Economy
    - HPP\_KG
    - Landuse\_KG
    - Tailings\_KG
  - Environment
    - Climate\_KG
    - Forest\_Stands\_KG
    - Forests\_KG
    - Geologic\_Faults\_KG
    - Geologic\_Faults\_Main
    - Geologic\_Formations\_KG
    - Geology\_KG
    - Landscapes\_KG
    - Precipitation\_KG
    - Protected\_Areas\_KG
    - Soil\_KG
    - Vegetation\_KG
  - Groundwater
    - GW\_Aquifers\_KG
    - GW\_Deposits\_KG
    - GW\_Springs\_KG
    - GW\_Wells\_KG
    - Hydrogeology\_KG
    - MPV\_Chu\_depr\_project
  - Hydrology
    - Glaciers
    - Glaciers\_MES
    - Lakes\_Main
    - Lakes\_Reservoirs\_Main
    - Lakes\_Small
    - River\_Basins\_Main
    - Rivers\_Main
  - Infrastructure
    - Canals\_6\_Systems\_KG
    - Canals\_All\_new
    - Canals\_Irrigation\_IMoMo
    - Main\_Canals
    - Railway\_KG
    - Road\_Network\_KG
    - Roads\_By\_Type\_KG
    - Roads\_Main\_KG
  - Monitoring
    - Hydroposts
    - Meteoposts
  - PilotSystems
    - Kojo\_Kaiyr\_Canals\_Coded
    - Kojo\_Kaiyr\_hydroposts\_Linked
    - Kojo\_Kaiyr\_HydroStructures\_Linked
    - Komsomol\_Aryk\_Linked
    - Komsomol\_Canals\_Coded
    - Komsomol\_Gvs\_Linked
    - Komsomol\_Hydroposts\_Linked
    - Komsomol\_HydroStructures\_Linked
    - Komsomol\_vdvs\_Linked
    - Komsomol\_vodovypusk\_Linked
    - Osh\_Canals\_Coded
    - Osh\_Hydroposts\_Linked
    - Osh\_HydroStructures\_Linked
    - Sovkhozniy\_Canals\_Coded
    - Sovkhozniy\_Hydroposts\_Linked
    - Sovkhozniy\_HydroStructures\_Linked
    - Suzak\_Canals\_Coded
    - Suzak\_Hydroposts\_Linked
    - Suzak\_HydroStructures\_Linked
    - Talas\_Canals\_Coded
    - Talas\_Hydroposts\_Linked
    - Talas\_HydroStructures\_Linked
  - DEM\_ASTER
  - Hillshade\_ASTER
- WaterObjectCoding
  - Basin\_Zones\_KG
  - BMA\_KG
  - Canals\_Main\_KG
  - Catchments\_KG
  - Hydroposts\_KG
  - Lakes\_KG
  - Meteoposts\_KG
  - Reservoirs\_KG
  - RiverBasins\_Main\_KG
  - Rivers\_KG
  - Water\_Quality\_Chu\_Talas
  - Watershed\_Systems\_KG
- WBA
  - Chu\_Basin\_Administration
  - Issyk\_Kul\_Basin\_Administration
  - Kara\_Daryia\_Basin\_Administration
  - Naryn\_Basin\_Administration
  - Talas\_Basin\_Administration
  - Water\_Basin\_Administration
- WUA
  - Borders\_All
  - Canals\_All
  - Canals\_Batken
  - Canals\_Chu
  - Canals\_Djalal
  - Canals\_IK
  - Canals\_Naryn
  - Canals\_Osh
  - Canals\_Talas
  - Ditch\_Batken
  - Ditch\_Chu
  - Ditch\_Djalal
  - Ditch\_IK
  - Ditch\_Naryn
  - Ditch\_Osh
  - Ditch\_Talas
  - Ditches\_All
  - Evaluation\_Naryn\_Batken\_2016
  - Gutter\_Batken
  - Gutter\_Chu
  - Gutter\_Djalal
  - Gutter\_IK
  - Gutter\_Naryn
  - Gutter\_Osh
  - Gutter\_Talas
  - Gutters\_All

## Geodatabase structure

WIS geospatial database built with a rich set of water resources and irrigation data with 126 vector spatial layers and two raster images. The WIS team published 100+ spatial layers and 40+ thematic maps online.



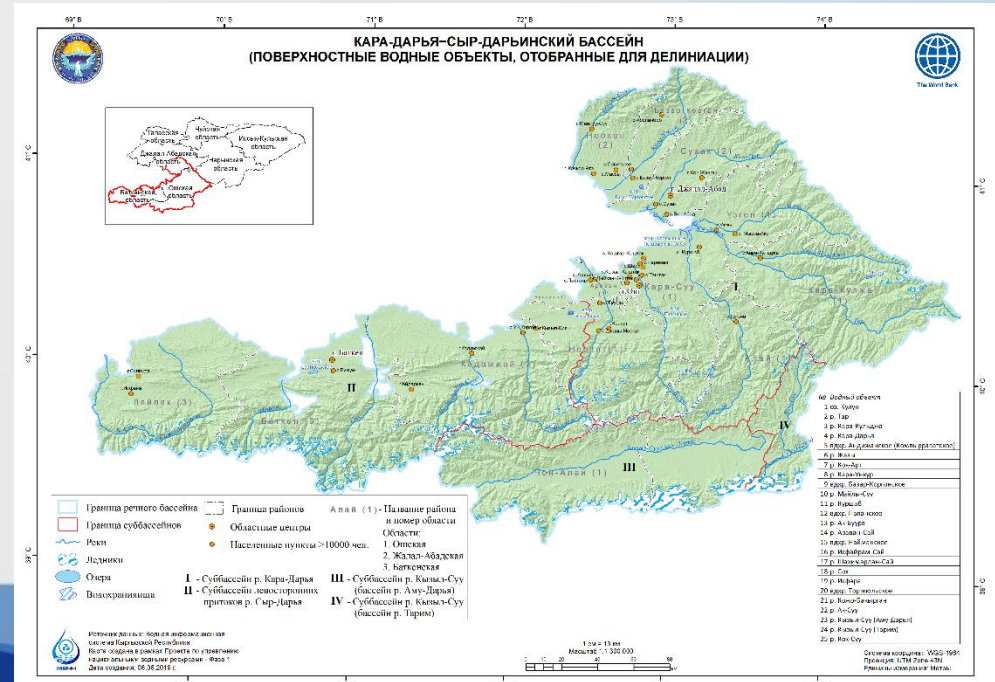
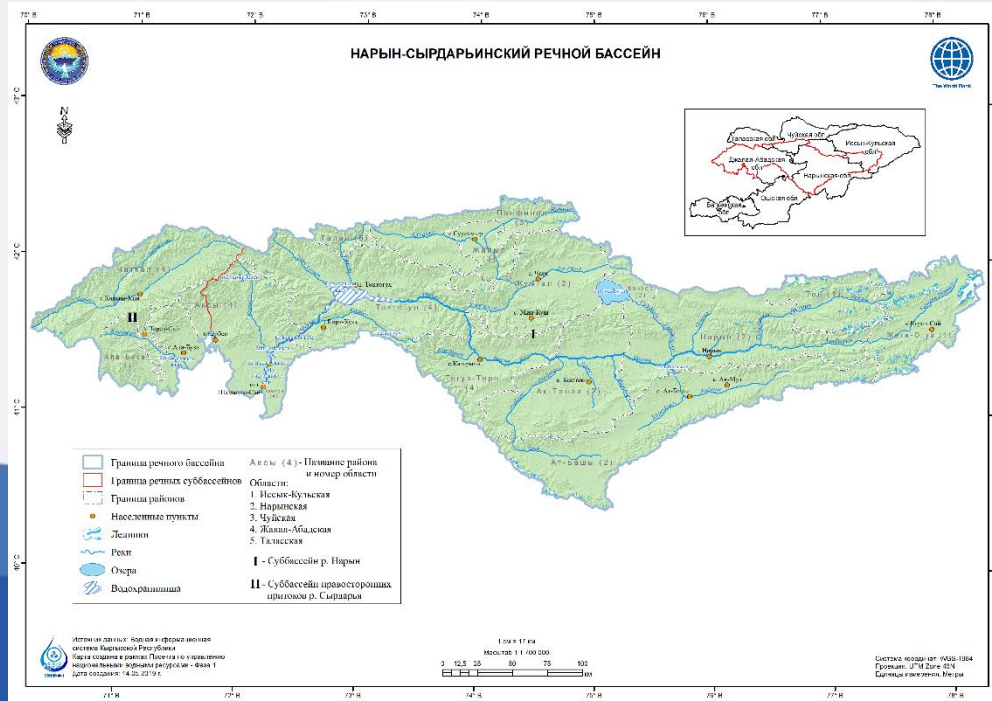
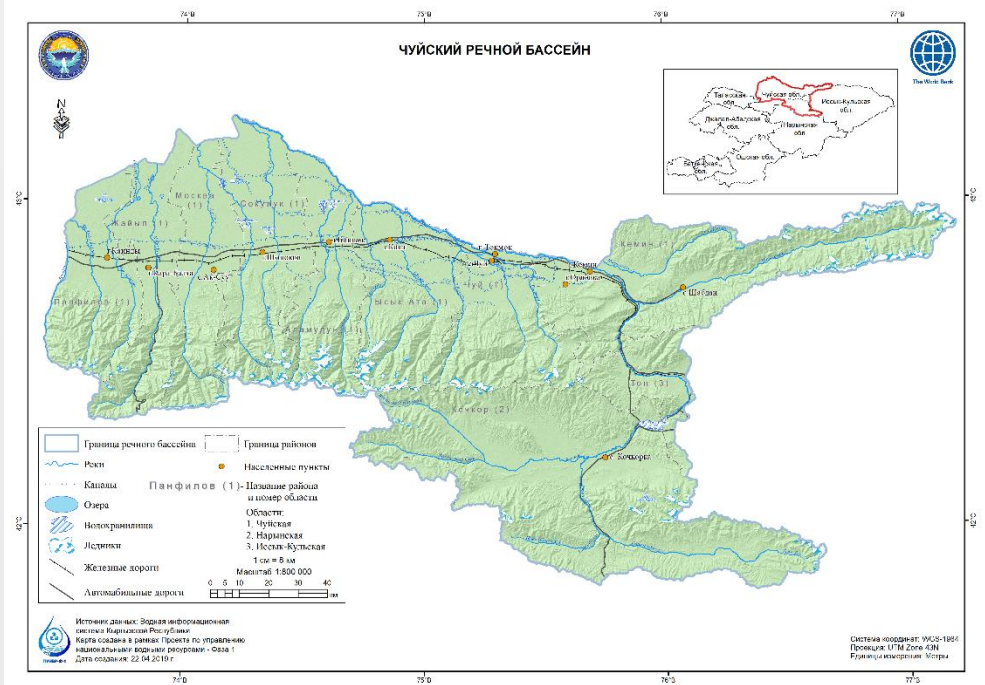
# Examples of digital maps



# Examples of digital maps

## Thematic maps for basin planning:

- Chuy river basin- 16 maps;
- Naryn-Syrdarya river basin - 28 maps;
- Kara-Darya – Syrdarya river basin - 29 maps;



# Геоинформационный портал о воде Кыргызской Республики



Департамент водного хозяйства  
и мелиорации Кыргызской Республики



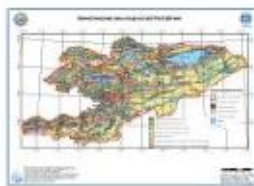
Проект управления национальными  
водными ресурсами-1

Featured Maps and Apps

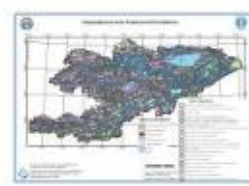
<https://gis.water.gov.kg/portal>



Гидропосты



Климат

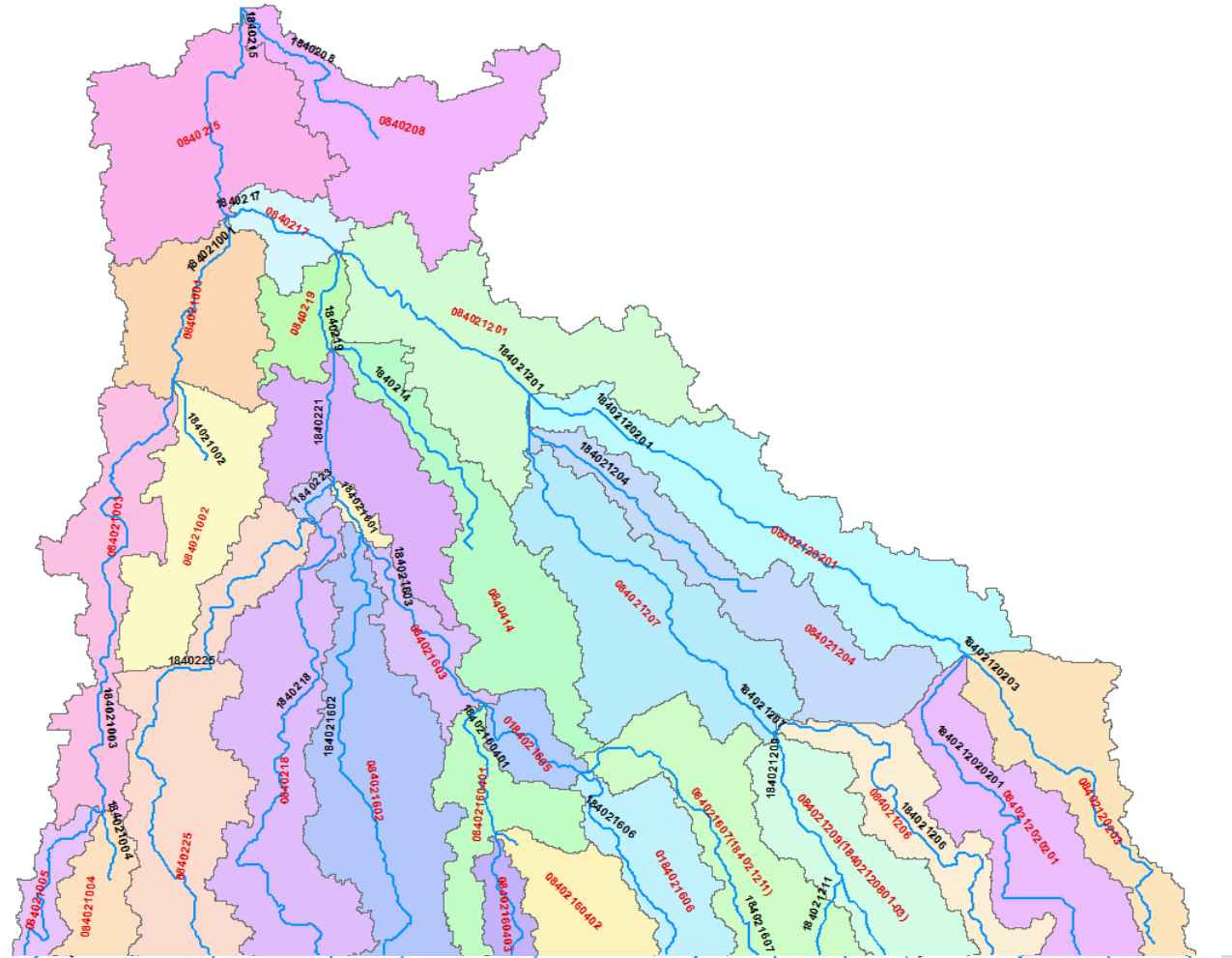


Ландшафтные\_зоны



# Water Object Coding (WOC) and testing using the example of the Sokuluk River Basin

Rivers  
Catchments

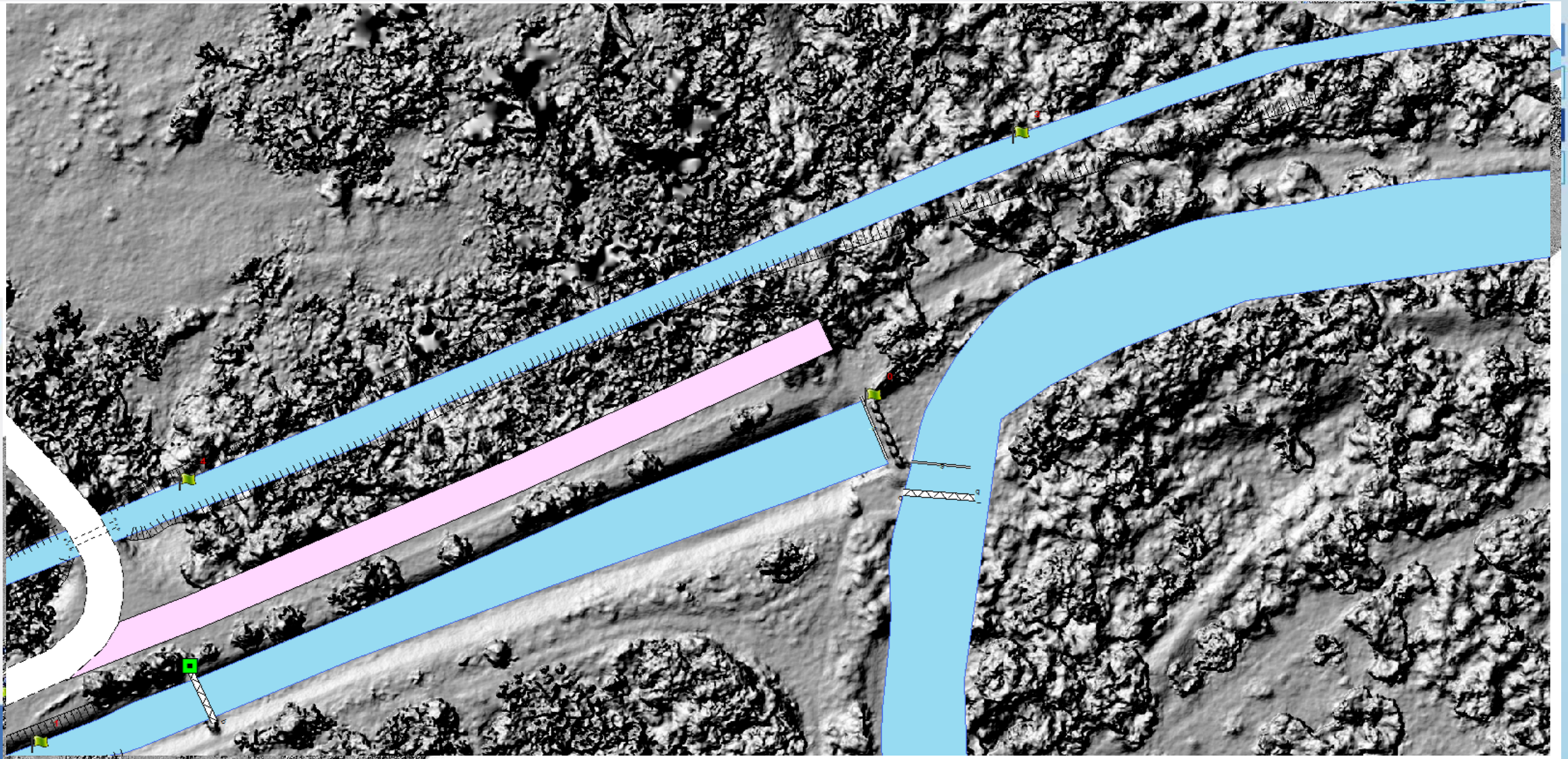


# Off-farm irrigation canal “Komsomolskiy”

Carried out a pilot survey in the Off-farm canal “Komsomolskiy”

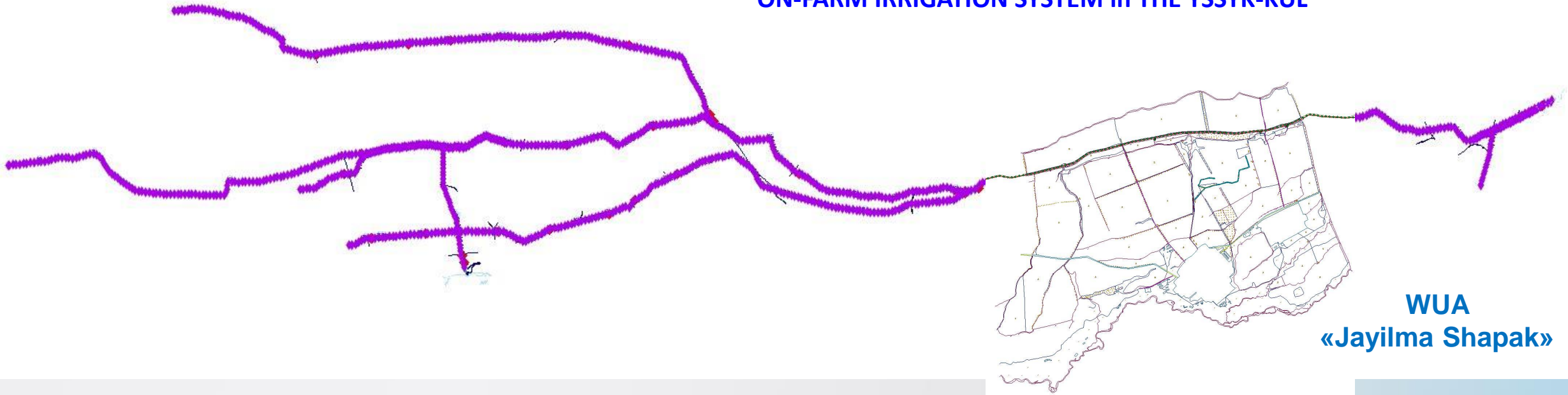


## Result of UAV survey in the off-farm canal “Komsomolskiy”



# Off-farm irrigation canal “Komsomolskiy”

ON-FARM IRRIGATION SYSTEM in THE YSSYK-KUL



WUA  
«Jayilma Shapak»

# ON-FARM IRRIGATION SYSTEM in THE YSSYK-KUL

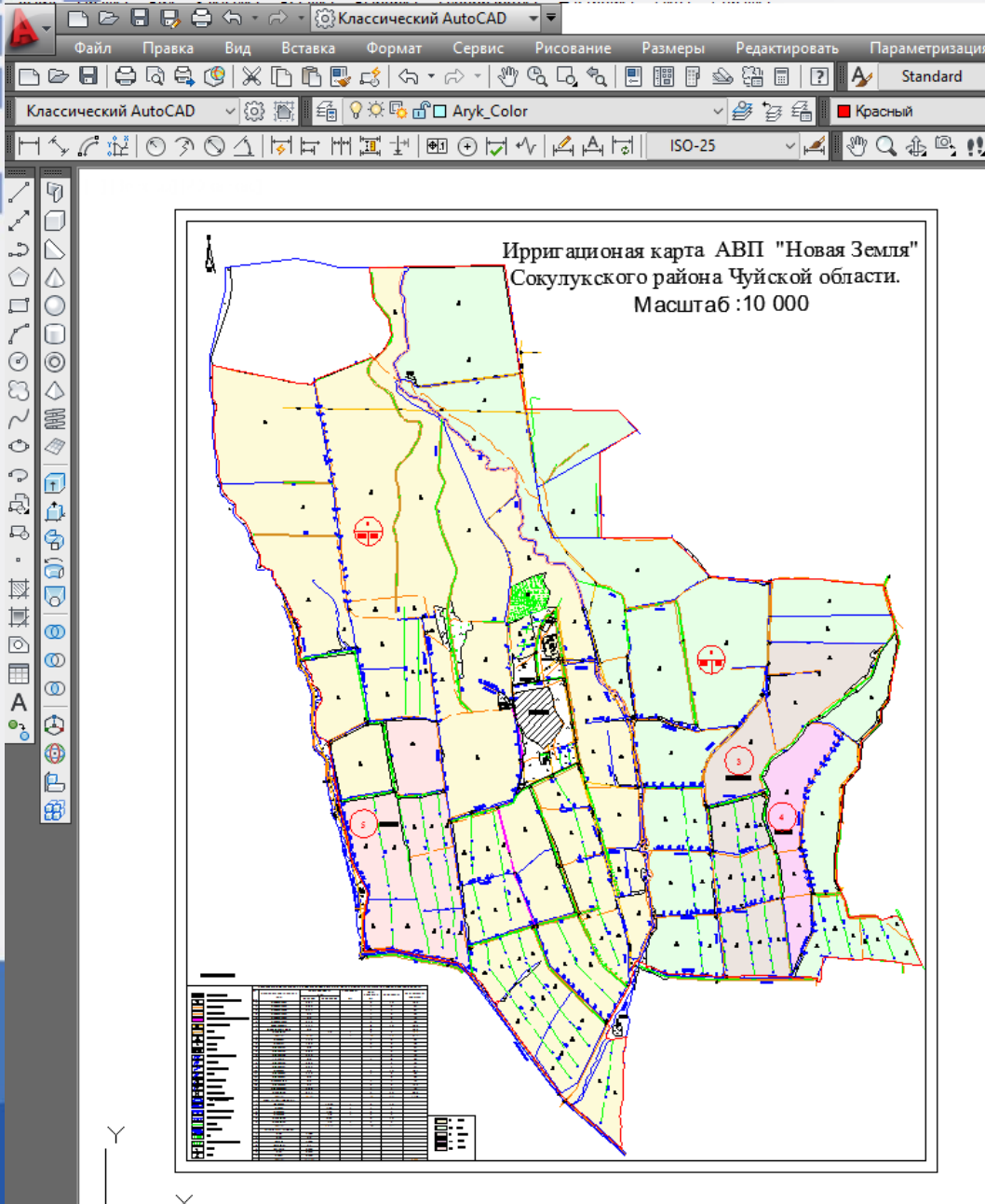


WUA  
«Jayilma Shapak»

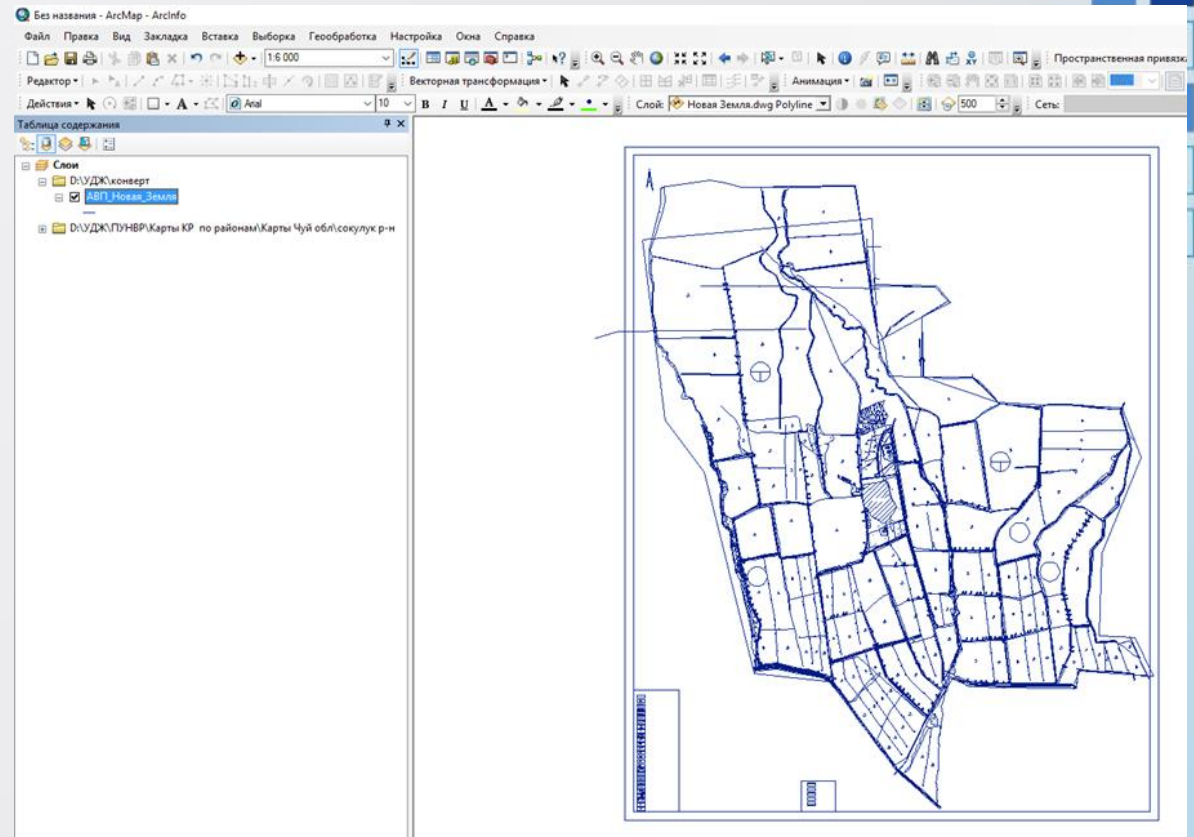




Existing WUA maps in \*.dwg format



Converted using ArcMap



Geo-referenced using satellite images and create \*.shp files

# Created database of AutoCAD drawings

## Главная форма

ПОИСК

Очистит

Добавить запись

Область	Район	Река	Тип сооружения	Канал	Описание	Кол. лист	Разработчик
Нарынская	Нарынский район	р.Кажырту	ГВС		План, сечения	1	ОсОО "РиР"
Нарынская	Нарынский район	р.Кажырту	ГВС		ГОЛОВНОЕ ВОДОЗАБОРНОЕ СООРУЖЕНИЕ	1	ОсОО "РиР"
Нарынская	Нарынский район	р.Кажырту	ГВС		ГВС	1	ОсОО "РиР"
Нарынская	Нарынский район	р.Кажырту	ГВС		ОБЗОРНАЯ СХЕМА МЕСТОПОЛОЖЕНИЯ	1	ОсОО "РиР"
Нарынская	Ноокатский район	р.Кажырту	ШЛЮЗ-РЕГУЛЯТОР		План, разрез.	1	ОсОО "РиР"
Нарынская	Нарынский район	р.Кажырту	ВОДОДЕЛИТЕЛЬ		План, разрез.	1	ОсОО "РиР"
Нарынская	Нарынский район	р.Кажырту	ГВС		Продольный профиль	1	ОсОО "РиР"
Нарынская	Нарынский район	р.Кажырту	ГВС		Топографическая семка	1	ОсОО "РиР"
Нарынская	Тогуз-Тороузский ра	р.Нарын 530000	ГВС	с.к-ла Жырма	ГенПлан	1	Temelsu - GIBB

# Web sites

<http://water.gov.kg>

The screenshot shows the homepage of the Department of Water Management and Irrigation of the Kyrgyz Republic. The header features the department's name in Kyrgyz and Russian, along with a logo. A navigation menu includes links for 'Главная', 'Новости', 'Контакты', 'Видео', 'Карта сайта', 'Веб-страница', 'Вакансии', and 'Библиотека'. A central image gallery displays various water infrastructure projects. Below the gallery, there are two news items: 'Фактическое наполнение водохранилищ на 01.08.2017 г.' (dated August 01, 2017) and '28 июля 2017 года состоялась Коллегия Департамента водного хозяйства и мелиорации по итогам хозяйственно-финансовой деятельности за I полугодие 2017 года' (dated August 01, 2017). A 'НАВИГАЦИЯ' (Navigation) sidebar lists categories like 'О департаменте', 'Нормативно-правовые акты', 'Подведомственные организации', 'Публикации', and 'Деятельность ДВХИМ'.

<http://nwrmp.water.gov.kg/>

The screenshot shows the homepage of the National Water Resources Management Project-1. The header includes the project name in Russian and English, along with the World Bank logo. A navigation menu lists 'О проекте', 'Ресурсы', 'Новости', 'Отчеты', 'Тендеры', 'Законопроекты', 'Сотрудничество', and 'Контакты'. A central banner features the text 'УПРАВЛЕНИЕ НАЦИОНАЛЬНЫМИ ВОДНЫМИ РЕСУРСАМИ-1' and 'NATIONAL WATER RESOURCES MANAGEMENT PROJECT-1'. Below the banner, there is a section titled 'УСТАНОВКА ЦИФРОВОЙ СЕТИ В СЕВЕРНОМ РЕГИОНЕ' (Installation of a digital network in the northern region), which includes an image of a network diagram and a list of announcements. The announcements mention 'Ценовые предложения на конкурс по оснащению серверных комнат в северном регионе' (dated 24 SEP, 2018) and 'Ценовые предложения на конкурс по оснащению серверных комнат в южном регионе' (dated 24 SEP, 2018). A sidebar on the right contains a login form and a list of categories like 'Информация (2)', 'Новости (82)', 'О главном (60)', 'Объявления (41)', and 'Результаты тендеров (1)'.

# Training and capacity building (2016-2019)



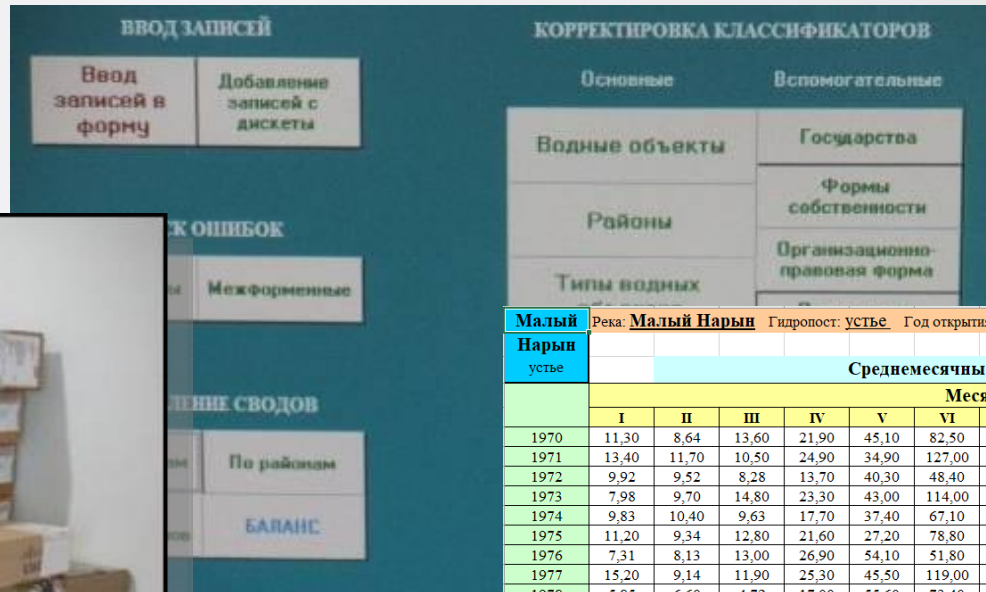
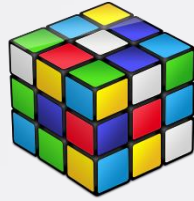
Basing computer training

Improve knowledge and awareness of database management and data collection

Advanced computer trainings (GIS, AutoCAD, Web design)

Water information system and digital information networks

# BEFORE



Река: **Малый Нарын** Гидропост: **УСТЬЕ** Год открытия поста: **1932** Код поста: **106**

Год	Среднемесячные расходы, м <sup>3</sup> /с								
	Месяцы								
	I	II	III	IV	V	VI	VII	VIII	IX
1970	11,30	8,64	13,60	21,90	45,10	82,50	96,10	80,20	51,60
1971	13,40	11,70	10,50	24,90	34,90	127,00	105,00	86,70	37,70
1972	9,92	9,52	8,28	13,70	40,30	48,40	58,60	70,30	32,80
1973	7,98	9,70	14,80	23,30	43,00	114,00	150,00	94,50	33,50
1974	9,83	10,40	9,63	17,70	37,40	67,10	88,30	61,60	30,70
1975	11,20	9,34	12,80	21,60	27,20	78,80	84,30	96,90	41,10
1976	7,31	8,13	13,00	26,90	54,10	51,80	74,80	75,00	46,50
1977	15,20	9,14	11,90	25,30	45,50	119,00	124,00	108,00	47,90
1978	5,85	6,60	4,72	17,00	55,60	73,40	139,00	114,00	36,70
1979	21,40	14,60	14,30	10,30	23,40	106,00	100,00	94,80	38,20
1980	10,80	7,82	7,73	16,10	55,90	87,50	105,00	87,50	39,60



Приложение 1  
Форма 1.1

**МСВХ и ПП КР**  
Департамент водного хозяйства

Технический паспорт № 1

1. р.Падша-Ата (наименование системы)

2. Канал Беш-Батман (наименование водного объекта)

3. Аксыйского РУВХ (наименование органа управления системой в структуре ДВХ)

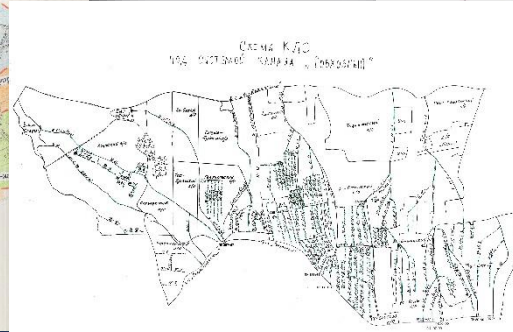
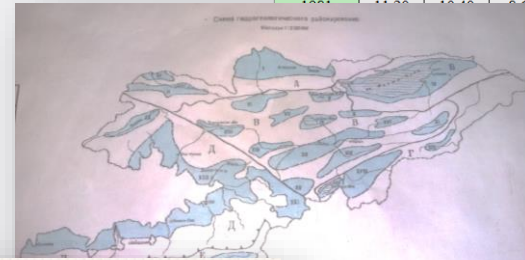
4. Год ввода в эксплуатацию 1927 г. реконструкция 1979 г.

5. Построена по проекту Главкиргивводстрой (наименование проектной организации)

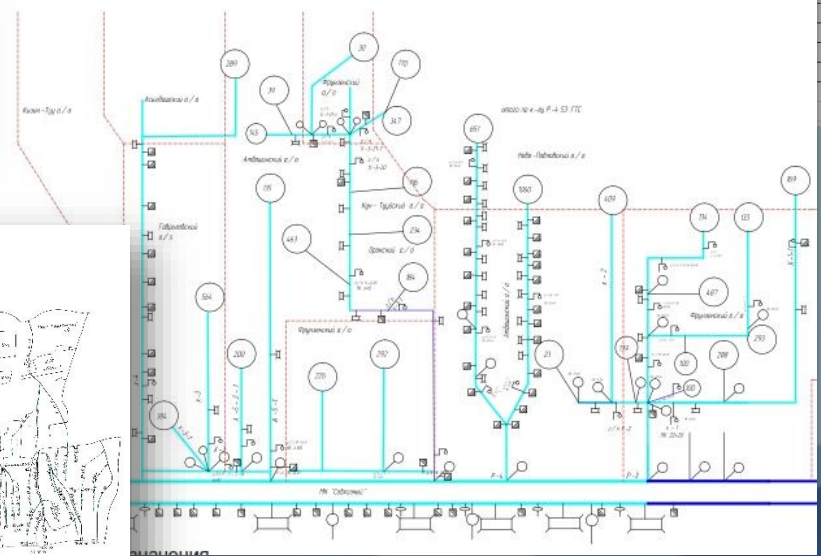
6. Общая площадь орошаемых земель 2496 га

7. Наименование основных водопользователей (АВП, Федерации АВП, предприятия и др.):

а)  АВП Кербен-Суу



Прямолинейная схема системы канала "Совхозный"

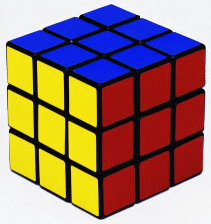


г.ка: 2258 М

сход	Дата
06	27/1
00	9/IV
	16/III
	28/1
	10/IV
	28/XII
	10/II
	8,43
	10/II
	27/III
	12/IV
	8/IV
	31/X
	15/V
	4/II
	8/II
	18/V
	15/XI
	6/V
	21/II
	3/V
	2/V

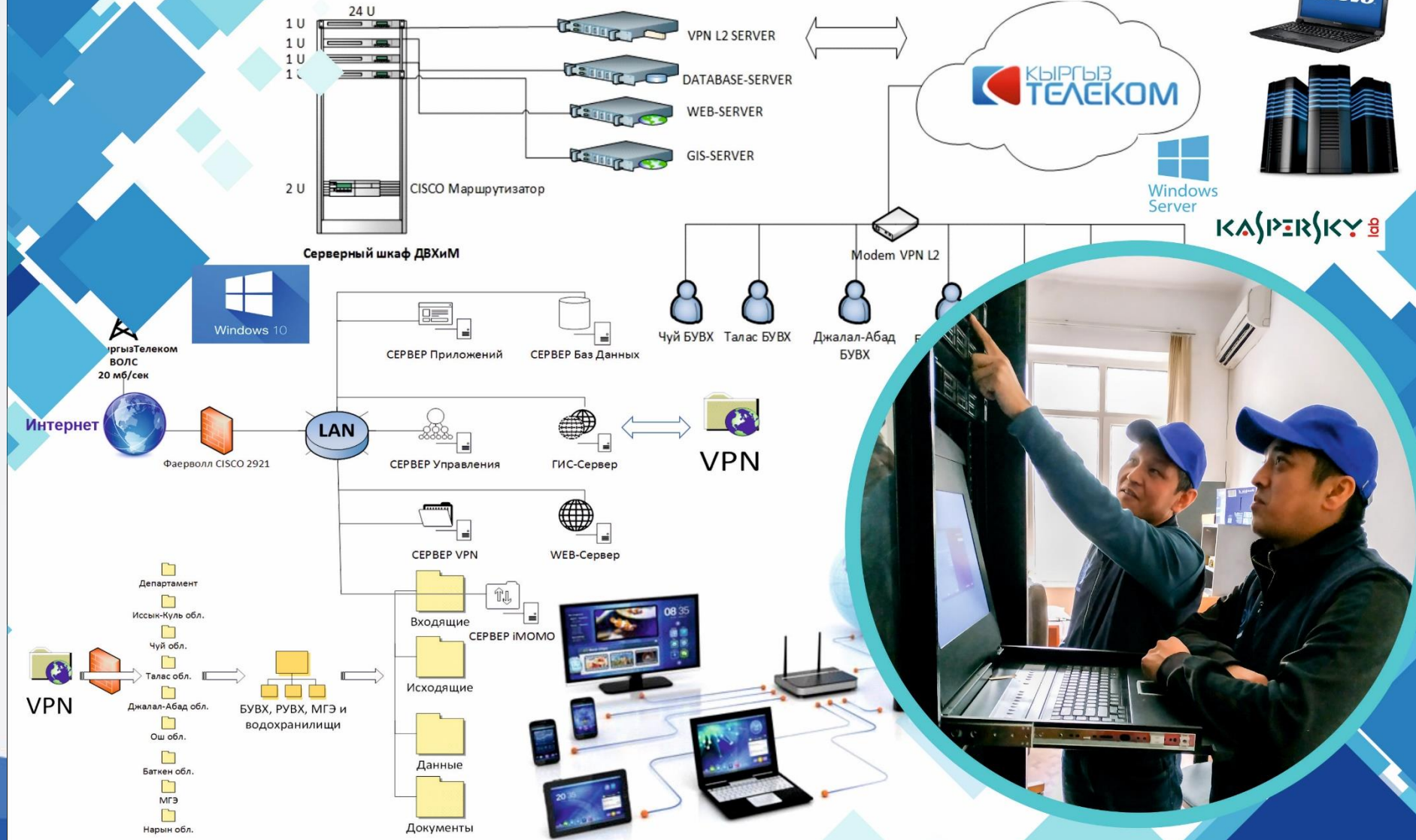


<http://water.gov.kg>



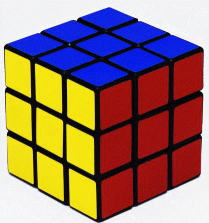
NOW

# DIGITAL INFORMATION NETWORK





<http://water.gov.kg>



**NOW**

# WATER INFORMATION SYSTEM

**QUANTUM GIS**

**AutoCAD**

**ArcGIS**

**Microsoft SQL Server**

**GPS TECHNOLOGY**

**VPN**

Региональное отделение **БУВХ**

Региональное отделение **РУВХ**

Главный офис **ДВХМ**

Другие удаленные пользователи **МГЭ**

УПР АВЛЕНИЕ НАЦИОНАЛЬНЫМ ВОДНЫМ РЕСУРСАМИ-1

ПРОСЬБЫ

ДЛЯ

ТИПОВЫЕ

# Further actions for the development of WIS.

- 1) Integrating tabular data
- 2) Integrating geospatial
- 3) Adding WIS applications
- 4) Disseminating data and information
- 5) Expanding WIS data holding and operation
- 6) Institution and professional development
- 7) Planning and securing WIS funding





Thank you very much for attention!