



USAID | العراق
من الشعب الأمريكي

**Governance Strengthening Project
(GSP)**

Najaf Sewer

Service Delivery Improvement Plan (SDIP)

Prepared by

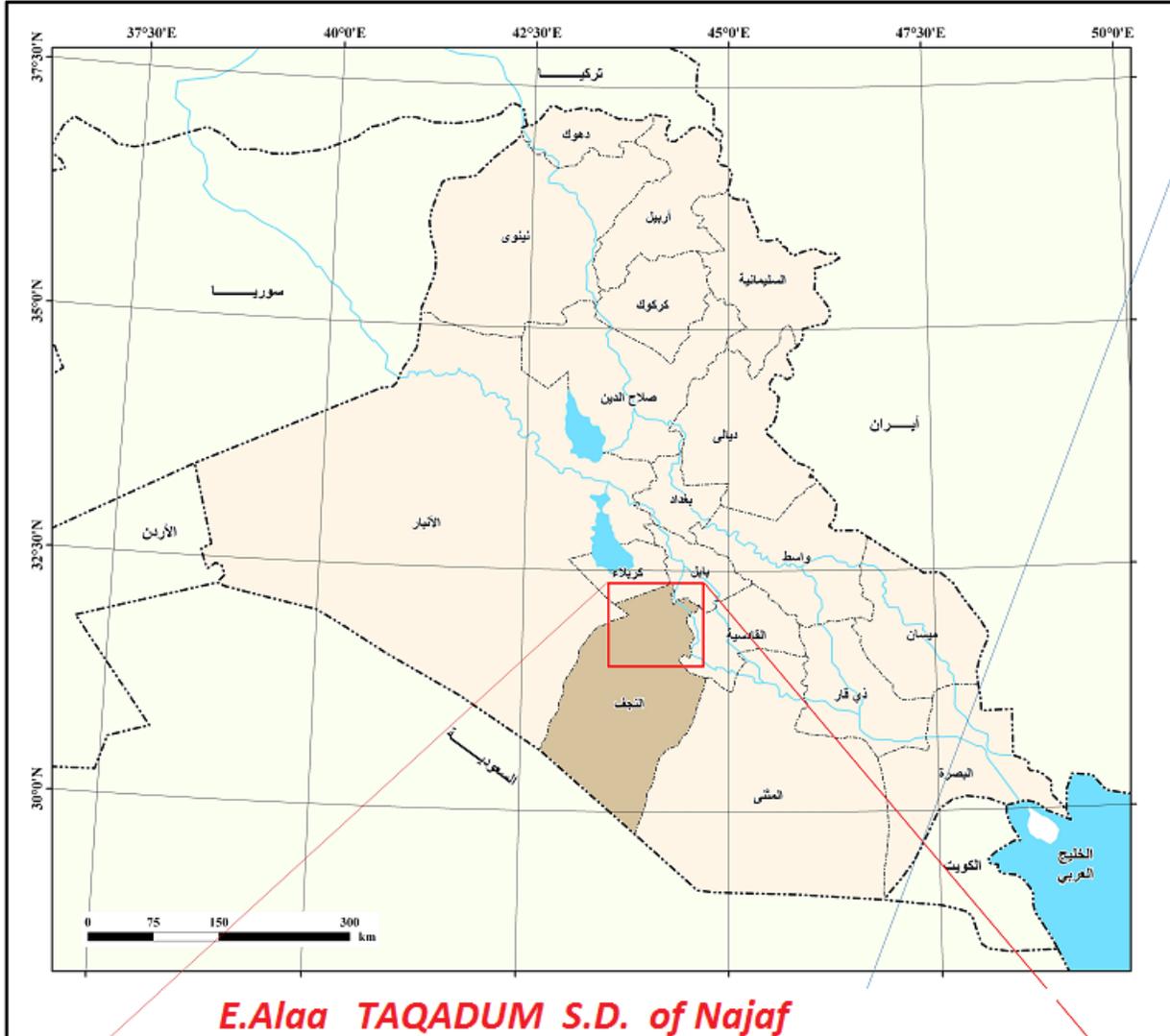
Najaf Sewer Directorate

In cooperation with

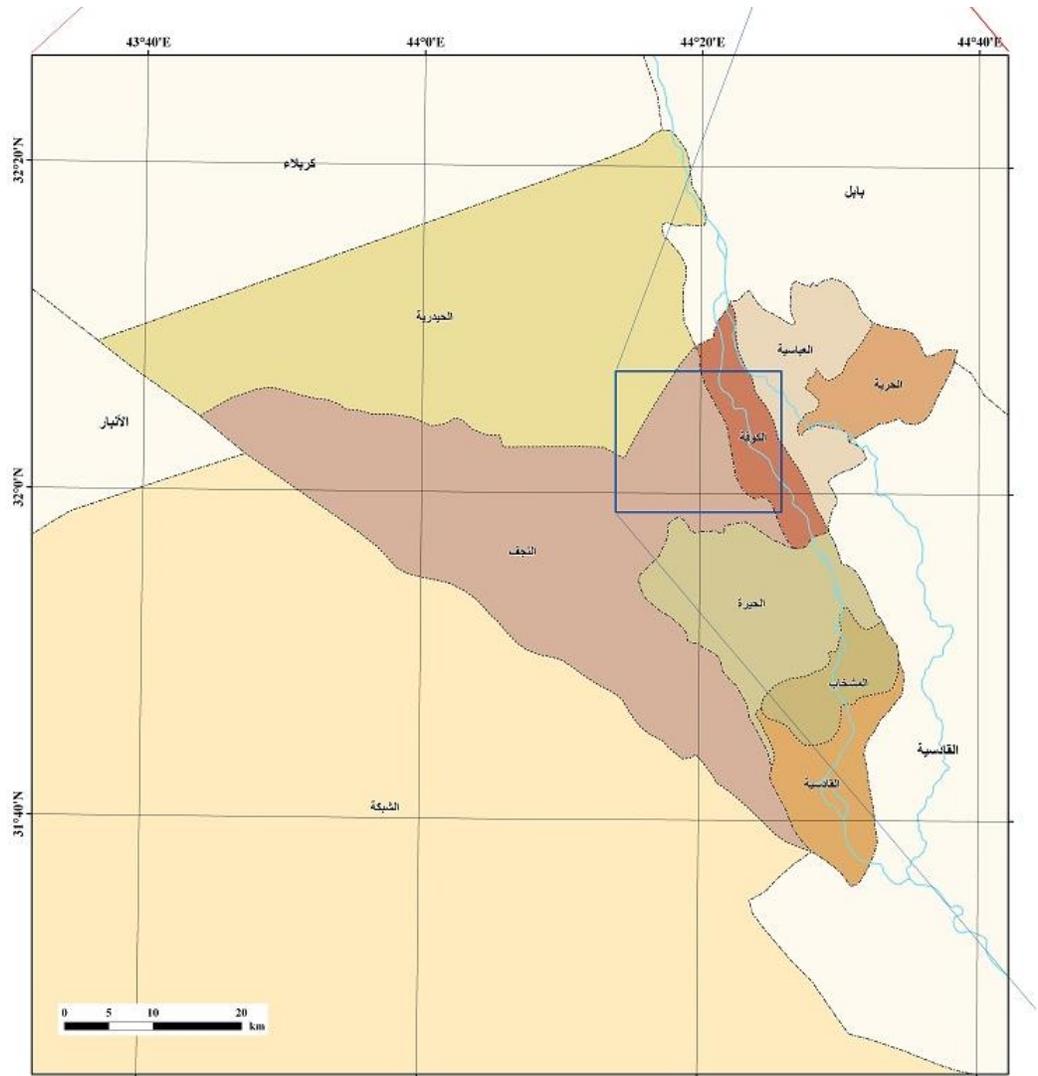
GSP/Taqadum

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Najaf - Iraq

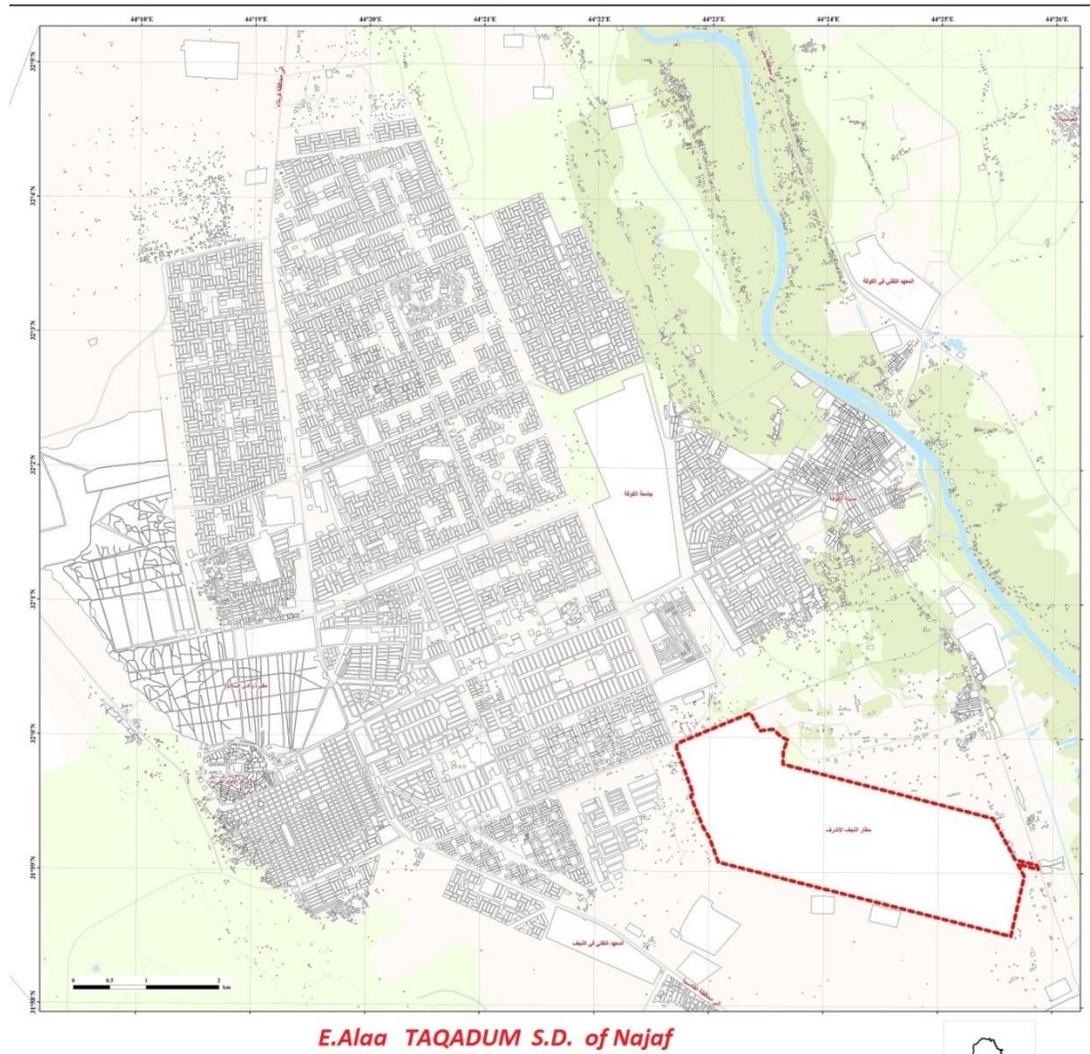


A map shows the location of Al-Najaf compared to Iraq surrounding resources



E.Alaa TAQADUM S.D. of Najaf

A map shows the administrative boundaries of Al-Najaf province.



A map shows the location of Al-Najaf district center.

After reviewing the province location and distance from rivers, we can understand a lot about issues concerning SDIP and improve service delivery to Citizens.

2-Executive Summary

The current analysis mechanisms used in reviewing performance indicators of Al-Najaf Sewer Directorate in providing services, compared with national standards, to ensure quality and sustainable services and timely response to citizen complaints and requests, have resulted in a set of basic elements and a set of immediate and long-term solutions that will improve service delivery to citizens, as follows:

Management of Sewer Services: Management of Sewer service delivery is an important and effective element which the directorate of Sewer in Al-Najaf aims to deliver to citizens.

Whereas, the lack of this service delivery negatively affects the health of citizens.

Service management is based on vital elements which should be effectively and efficiently invested to provide integrated services with high quality to citizens.

Other important elements are financial resources (investment and operational budget, effective usage of revenues from collecting fees or charges), human resources (the administration of the directorate, engineering staff, and those who work in Sewer projects and stations) and other available resources such as equipment and vehicles. Financial resources are not the only element that governs and directs the delivery of services; rather, the management of these resources through organized processes and preplanning and investment are also important. All these would achieve the goals of the Directorate and local government, as well as the national strategic goals.

It is worth noting that financial integration of the Directorate with other service sectors and the integration in preparing the operational budget in consistent with the investment budget have a positive effect on the efficiency and sustainability of services.

1- Stages of work on the service delivery improvement plan:

Al-Najaf Sewer Directorate and in cooperation with USAID GSP/Taqadum program completed the gap analysis model developed by Taqadum program to actively contribute to the gap analysis. The importance of gap analysis in the services provided to citizens is that:

1. Usage of the scientific method in the analysis of all elements that causes a gap in the services provided to citizens indicator compared with the standard criteria.
2. Determine the priority of the elements influencing the gap in services through the power of their influence.
3. Put the proposed immediate and long-term solutions to address the elements affecting the gap in order to minimize them.
4. The results of the analysis which represent proposed immediate and long-term solutions will be the input for the preparation of relevant service delivery improvement plan in the province.

The successful use of the model will lead to get accurate results that help determining the right and realistic and executable solutions in reducing the gap and improving the service.

Analysis of elements causing the gap in the service performance:

It Included analysis of (14) elements that are associated with one of the service criteria listed previously and relating to the administrative, legal, financial, technical aspects where after completing the analysis, weaknesses or deficiencies were identified in each element and the proportion of its influence in the gap, and thus the most influential elements in the events of the gap were chosen. Al-Najaf Sewer directorate identified these elements and developed immediate and long-term solutions that effectively contribute to the reduction of the value of the gap. In the next chapter, all performance indicators will be analyzed in comparison with criteria via using elements analysis in detail, and finally to develop solutions for the elements of the most influential events in the gap.

2- Gradual approach

The (SDIP) includes the following questions:

1. Where are we now?
2. Where do we want to be?
3. How can we get there?
4. How can we ensure success?

"1-2 "Where are we now?"

To answer this question, it requires a comprehensive and objective review and a review of the current state of performance and practices of Sewer departments in Al-Najaf and should be measured through key performance indicators. The data related to 'Where are we now?' "Can be obtained by using the relevant technologies,

First: ((SWOT analysis by diagnosing strengths -weaknesses, -opportunities-threats.

Second: Key Performance indicators analysis - these two techniques help to understand and summarize the environment and the performance of the Directorate.

The SWOT analysis helps to identify realistic short, medium and long-term goals in order to:

- Correct weaknesses
- Enhance strengths
- Prevent threats
- Seize opportunities
- Achieve vision

SWOT Analysis of Al-Najaf directorate of sewer:

Strengths

- High percentage of waste water and storm water networks coverage;
- The existence of GIS.
- The existence of highly experienced and qualified technical and administrative staff;
- Sufficient specialized vehicles such as septic tankers, sewer vacuum trucks, and sensors.
- The directorate has labs and staff speiclaized in tests.
- Ability to hold training courses in the directorate.
- Ongoing coordination with the governorate in a horizontal way and the Ministry in a vertical way for carrying out future projects.

Weaknesses

- It is needed to activate additional laws to minimize illegal uses and unauthorized connection to networks.
- Lack of available oppurtunities for training workers abroad.
- Insufficient buildings of the directorate.
- Lack of financial allocations for Sewer sector.
- Insufficient staff and vehicles.

Opportunities

- Support provided by the concerned bodies.
- Positve reaction of some departments and institutions.
- The existence of Ministrial and local plains proposed to improve services and solve problems.
- The strategic importance of Sewer sector.
- Support of donor bodies.
- Good security situation in the province.

Threats

- Lack of incintives for employees.
- Outdated legislations.
- Weak joint planning and information-sharing.
- Poor financial resources specified from the government.
- Failure to complete projects on time.

- Lack of awareness among citizens and illegal uses and unauthorized connection to storm water and sewer networks.
- Expanding population inconsistent with available possibilities.
- High water table and poor performing companies.

Second: performance indicators:

GSP/Taqadum Project supports local governments in improvement of service delivery oversight and supervision in order to advance level of services provided to citizens through adopting measurable standards in a manner that is similar to other developed countries. The service delivery standards rely on three major basics since it is regarded as key service that need to be obtained in quantitative and qualitative manner through the following standards and indicators:

- 1- Coverage of storm water and sewer networks.
- 2- Ability for waste water treatment
- 3- Addressing people complaints in an effective manner.

Al-Najaf Directorate of Sewerage acted according to these indicators. All indicators at Al-Najaf district center levels were provided. The directorate reviewed performance indicators in comparison with standards, diagnosed weaknesses, identified value of gap and made recommendations that contribute to advancement of level in Al-Najaf district center.

Annex No. 1 shows the certified standards to assess storm water and waste water service delivery.

Information related to pumping stations in Al-Najaf district center.

Name of pumping station	Type		Capacity L/S	Discharged to
	Heavy water	Storm water		
Al-Ghadeer	Heavy		25	Al-Barakhiyah Project
Al-Wafaa	Heavy		25	Khari Al-Sheikh
Old Najaf	Heavy		400	

Note:-

Part of networks lengths and manholes numbers mentioned in the table haven't been operated yet, due to incomplete treatment unit.

Part of networks lengths and manholes numbers mentioned in the table haven't been fully entered in the GIS system.

District name	Networks lengths		Manholes numbers	
	Heavy water	Storm water	Heavy water	Storm water
Najaf	491309	264707	10421	5429
Al-Kufa	209454	110040	5845	2470

➤ **Heavy water and storm water coverage indicator:**

The reality of the coverage of heavy water networks in Al-Najaf district center is 80 % and the value of the gap is 20%. While storm water systems coverage is 65% and the the gap is 35%. Accordingly it is possible to find solutions after reviewing the above table.

Elements causing gap and their effect

- 1- Human resources: The element has a high effect on the gap as the networks coverage needs sufficient technical and administrative staff. This effect became very low as the gap is minimized. The staff comprises of 16 engineers, 8 Technicians, and 4 administrative employees, but the directorate needs 4 engineers, 4 Technicians, and 4 administrative employees to fill the gap.
- 2- Financial resources: It has a high effect on the gap and it is the most effective element on other criteria as it concerns financing networks coverage projects to minimize the gap. It is worth noting that the investment budget for sewer projects during 2013 in the province was 74 billion Iraqi dinar, excluding under-construction projects, and the budget for regional development projects is 40 billion Iraqi dinar. About 60 billion Iraqi dinar is needed to fill the gap, although expansion in the city is not considered by urban planning dept.
- 3- Infrastructure: It has no direct effect on the gap as the directorate has sufficient buildings
- 4- Supplies: It has no direct effect on the gap.
- 5- Capacity building: this element has a high effect on the gap. It represents in building the capacity of those employees who supervise networks coverage projects which leads to

- quick implementation. There are about 70 training courses are being held in the training center, and there is a need to hold specialized training courses in the field of supervision.
- 6- Technical Obstacles: It has a high effect on the gap. It overlaps with other projects or services delivered by other departments which leads to a delay in implementing projects. It is needed to set a committee from the representatives of the departments to solve technical problems and coordinate with all departments.
 - 7- Authorities: This element has an effect representing in vesting the resident engineer departments in the provinces financial and legal authorities which results in quick implementation. However, there are resident engineers departments, but they do not have full authorities and need to get approvals from the Ministry. It has a high effect on the gap.
 - 8- Coordination: increasing the horizontal and vertical coordination will lead to quick projects execution. It represents in coordinating with the concerned bodies and superior authorities. It has a medium effect on the gap.
 - 9- Political interferences: It has no direct effect on the gap because of the political stability in the province.
 - 10- Misuse of resources: Thoughtful planning for projects in the last years by the concerned bodies leads to minimize the effect of this element despite there are problems such as illegal uses and unauthorized connection to networks by citizens, and companies.
 - 11- Operation and maintenance: This element has a medium effect on the gap.
 - 12- Security circumstances: this element has no effect on the gap due to good security conditions in the province.
 - 13- Logistic support: This element has no direct effect on the gap.
 - 14- N/A

Based on the above explanation, the following elements have the highest effect on the gap: 1) Human resources 2) Financial resources 3) Capacity building 4) Technical Obstacles 5) Authorities.

S.No	Criteria	Arrangement of basic elements (which receives the figure 3 (high effect) that contribute	Immediate solutions	Long term solutions

		to the reduction of the value of the gap, according to the priority		
1	Service coverage	Human resources	Assign 4 engineers, 4 technicians, and 4 administrative employees from the Ministry to work at the directorate	Create job prospects on the permanent staff of the directorate.
		Financial Issues (lack of operational budget, investment budget and regional development budget)	Complete the unfinished projects in Al-Milad, Al-Salam, Al-Furat, Al-Ghirri, Al-Atibaa, Al-Nafut, civil department complex, craftsman, Adan, and Al-Qudus neighborhoods.	Increase yearly allocations specified for investment plan to establish heavy water networks and lifting stations, especially in Al-Nidaa neighborhood.
		Capacity building	Increase the training courses for some supervisors. Otherwise, the project will be delayed.	There are about 70 training courses are being held in the training center, and there is a need to hold specialized training courses in the field of supervision.
		Technical obstacles	Increase coordination with the concerned departments to reduce technical obstacles and overlap amongst projects.	Set a permanent committee with the concerned departments to develop a single road map including all projects and their data according to GIS system.
		Authorities New (administrative, legal, financial, technical) authorities.	Increase the authorities vested to resident engineers departments concerning supervision, and decision-making independently.	

Indicator of ability of sewer water treatment

The amount of heavy water reaching to the treatment station is amounting to 46,000 M3/day, while the design capacity for the whole three stations is amounting to 39320 M3/day. Therefore, the percentage of treatment in the province district center is 85% and the gap is 15%. This percentage is calculated through certified standards and according to inflows compared to outflows. The gap will be minimized when completing Al-Najaf sea station with a capacity of 100,000 m3/day which treats waste water of 500,000 people.

Elements causing gap and their effect

- 1- Human resources: The element has a low effect on the gap.
- 2- Financial resources: It has a medium effect on the gap due to boring routine.
- 3- Infrastructure: It has a high effect on the gap as the directorate needs to complete Al-Najaf sea treatment station as well as ging existing stations.
- 4- Supplies: It has a high effect on the gap due to lack of spare parts for maintenance.
- 5- Capacity building: It has no effect on the gap.
- 6- Technical Obstacles: There are obstacles in the mechanism of designs change in Al-Najaf sea station which is the cause of the delay. It has a high effect on the gap.
- 7- Authorities: Inability of the resident engineer to give his opinion or take decision without the approval of the Ministry, and accordingly leads to a delay in projects. It has a high effect on the gap.
- 8- Coordination: increasing the horizontal and vertical coordination will lead to quick projects execution. It has a medium effect on the gap.
- 9- Political interferences: It has no direct effect on the gap because of the political stability in the province.
- 10- Misuse of resources: It has no direct effect on the gap.
- 11- Operation and maintenance: This element has a medium effect on the gap as the directorate needs more operational capacities.
- 12- Security circumstances: this element has no effect on the gap due to good security conditions in the province.
- 13- Logistic support: This element has no direct effect on the gap.
- 14- N/A

Based on the above explanation, the following elements have the highest effect on the gap: 1) infrastructure 2) Authorities 3) Technical Obstacles 5) Supplies.

S.No	Criteria	Arrangement of basic elements (which receives the figure 3 (high effect) that contribute to the	Immediate solutions	Long term solutions

		reduction of the value of the gap, according to the priority		
2	The ability to treat wastewater	Infrastructure	Complete Al-Najaf sea treatment station (under construction) as soon as possible, to minimize the gap. Percentage of completion is 85% and it is possible to finish it during the next months.	Establish a new treatment station with a capacity of 100,000 to control future expansion in the north side of Al-Najaf.
		Technical obstacles		Enact laws and transfer required authorities to approve changes in designs without reference to the Ministry to reduce time.
		Authorities New (administrative, legal, financial, technical) authorities.		Create authorities to follow-up illegal uses to networks and accelerate projects completion.
		Supplies	Provide spare parts for the three treatment stations pending the completion of the new station.	Providing spare parts for the new station for preventive maintenance.

Indicator of efficiency of wastewater treatment:

It is one of the medium indicators in Al-Najaf district center with a percentage of 60% , and therefore, the gap is 40%. This percentage is calculated according to the average of the following limitations:

- 1- BOD : 88% for the indicator, and 12% for the gap.
- 2- TSS : 17 % for the indicator, and 83% for the gap.
- 3- COD : 75% for the indicator, and 25% for the gap.

Elements causing gap and their effect

- 1- Human resources: The element has a high effect on the gap. The existing staff consists of 1 engineer, 2 biological chemists, 3 technicians, and 2 administrative employees, but the directorate needs 2 engineers, 4 biological chemists, 4 technicians, and 4 administrative employees.
- 2- Financial resources: It is very effective on the gap. There is a need to develop the existing treatment stations and establish new ones.
- 3- Infrastructure: It has a high effect on the gap as the directorate needs an additional treatment station and develop the existing one by adding additional treatment units within the old stations to treat the industrial wastes and sewer such as
- 4- Supplies: It has no direct effect on the gap as the supplies are purchased from the projects budgets and there are available lab tests materials and devices.
- 5- Capacity building: this element has a low effect on the gap. It represents in building the capacity of supervisors. There are about 70 training courses are being held in the training center, and there is a need to enhance these courses with specialized curriculum.
- 6- Technical Obstacles: There are no obstacles except the aging stations. It has a medium effect on the gap.
- 7- Authorities: This element has a high effect on the gap. There is no enough authority vested to the departments to accelerate completing projects related to treatment stations and no authorities vested to committees to address the illegal uses and unauthorized connection to networks. It has a high effect on the gap.
- 8- Coordination: increasing the horizontal coordination with the departments of health and environment to test treated water and vertical coordination with security and judicial bodies, and health department to remove these illegal uses and unauthorized connection to networks. It has a medium effect on the gap.
- 9- Political interferences: It has no direct effect on the gap because of the political stability in the province.
- 10- Misuse of resources: It is very effective on the gap because there are problems representing in illegal uses and unauthorized connection to networks by citizens, and contracting companies, in the industrial areas.
- 11- Operation and maintenance: It is very effective on the gap, where the treatment stations and laboratories need preventive and regular maintenance and quick rehabilitation, especially in the electrical and mechanical parts of the station.
- 12- Security circumstances: this element has no effect on the gap due to good security conditions in the province.
- 13- Logistic support: This element has no direct effect on the gap.
- 14- N/A

Based on the above explanation, the following elements have the highest effect on the gap: 1) Human resources 2) Financial resources 3) Capacity building 4) Authorities 5) Misuse of resources 6) Maintenance and operation.

S.No	Criteria	Arrangement of basic elements (which receives the figure 3 (high effect) that contribute to the reduction of the value of the gap, according to the priority	Immediate solutions	Long term solutions
3	Efficiency of wastewater treatment	Human resources	Assign 2engineers, 1 biological chemist, 4 technicians, and 1 administrative employee from the Ministry to work at the directorate	Create job prospects on the permanent staff of the directorate in order not to lose efficiencies after training and experience.
		Financial Issues (lack of operational budget, investment budget and regional development budget)		Complete the new treatment station as soon as possible because the existing ones are not capable to treat water inflows.
		Infrastructure	Complete the treatment station in Al-Najaf sea to minimize the gap.	There is a need for a new laboratory for lab tests.
		Authorities New (administrative, legal, financial, technical) authorities.		Create authorities to follow-up illegal uses to networks and accelerate projects completion.
		Misuse of resources	Follow up the industrial areas in which people get rid of wastes in heavy water network which leads to kill	Enact laws to impose fines against violators

			bacteria responsible for heavy water treatment or reduce the efficiency of treatment.	
		Maintenance and operation	Increase allocations within the operational budget for the directorate.	Provide mechanical and electrical parts for the treatment station and provide devices needed for lab tests.

➤ Citizens' complaints and the extent of response:

The directorate responds quickly to citizens' complaints through reporting citizens' complaints in the northern and southern maintenance centers as well as the directorate main office and different media. Therefore, the indicator is 92% and the gap is 8% depending on reviewing citizens' records.

Elements causing gap and their effect

- 1- Human resources: The element has a high effect on the gap. The existing staff consists of 5 engineers, 7 technicians, and 3 administrative employees, but the directorate needs 3 engineers, 6 technicians, and 3 administrative employees.
- 2- Financial resources: It has a low effect on the gap.
- 3- Infrastructure: It has a high effect on the gap as the directorate needs to increase the number of maintenance centers to respond quickly to citizens' complaints. Now, there are two existing small buildings for maintenance.
- 4- Supplies: Support maps with coordinates in the GIS system. And accordingly using the GPS to respond quickly as well as providing additional vehicles include septic tankers and sewer vacuum trucks. It has a high effect on the gap.
- 5- Capacity building: There is a need to activate the GIS System, and train the staff how to use modern devices such as sonar devices and increase their numbers. It has a high effect on the gap.

- 6- Technical Obstacles: It has a low effect on the gap.
- 7- Authorities: It has a low effect on the gap.
- 8- Coordination: It has a low effect on the gap.
- 9- Political interferences: It has no direct effect on the gap.
- 10- Misuse of resources: It has no direct effect on the gap.
- 11- Operation and maintenance: It has a low effect on the gap.
- 12- Security circumstances: this element has no effect on the gap.
- 13- Logistic support: This element has a low effect on the gap.
- 14- N/A

Based on the above explanation, the following elements have the highest effect on the gap: 1) Human resources 2) infrastructure 3) Supplies.

S.No	Criteria	Arrangement of basic elements (which receives the figure 3 (high effect) that contribute to the reduction of the value of the gap, according to the priority	Immediate solutions	Long term solutions
4	Citizens' complaints and the extent response	Human resources		Create job prospects on the permanent staff of the directorate in order to follow the citizens' complaints and respond quickly.
		Infrastructure		Establish new buildings for maintenance teams, their vehicles, and citizens' service desk.
		Supplies (lack of equipment, devices, materials, fuel, generators, and furniture)		Provide new vehicles and communication devices depending on GIS and activate using sensors, GPS, and wireless devices.

2 - 2 “where do we want to be?”

Based on the information collected in as-in status report, it is possible to develop and illustrate goals and objectives of the directorate that can be inferred from mission and vision of the directorate. It is obligatory to set performance standards and objectives according to SMART criteria (specific, measurable, assignable, realistic or time-related).

Vision:

Pollutants-free environment.

Mission:

- Discharge waste water of cities and get use of treated water for agriculture.
- Discharge storm water to rivers.

Objectives:

- 1- Increase the percentage of the service delivered by the directorate to citizens in Al-Najaf district center to 100%.
- 2- Develop methods of heavy water treatment by establishing additional units within the treatment stations and establishing additional treatment stations.
- 3- Develop the methods of carrying out sewer projects by using Trenchless Sewer Installation depending on modern survey devices and projecting data according to coordinates for easy future access.
- 4- Improve the efficiency of those who work in this field by holding training courses specialized in maintenance.

Program:

- 1- Establish projects of treatment stations.
- 2- Establish projects of conveyance lines, lifting stations, and heavy water and storm water networks.
- 3- Held training courses inside and outside Iraq to improve the skills and efficiencies of the staff.

2 - 3 “How can we reach there?”

Directorate of Sewerage in Al-Najaf district center and in cooperation with USAID-funded GSP/Taqadum Project filled out gap analysis form as developed by GSP/Taqadum Project in order to contribute to gap analysis. The importance of the form for service delivery gap analysis comes from:

1. It uses scientific method to analyze all the effective elements which lead to a gap in service delivery indicator in comparison with standard.

2. It prioritizes the effective elements that lead to gap in service delivery by size of effect.
3. It proposes immediate and long term solutions to address the effective elements with the aim to reduce them.
4. Results of analysis, i.e. the proposed immediate and long-term solutions shall form inputs for preparation of service delivery improvement plan of the province.

2 – 4 “How can we ensure success?”

To ensure the success of SDIP, it is important to conduct continuous monitoring of progress assessment standards and indicators in order to improve the performance and external factors at all levels, and record findings and reactions using proper mechanisms for report writing. This allows the administration to identify factual and potential success and failure at early stage so that amendments are facilitated on time. It is required to establish a unit within the directorate to coordinate activities and assess the performance on a monthly basis in line with objectives approved. The unit shall report to DG of sewerage and prepare quarterly and annual progress and performance reports. DG of sewerage monitors the implementation of SDIP and reports to the Provincial Planning and Development Council and the Governor’s Office as needed. All parties shall provide strategic guidance for effective implementation of the plan.

3. Suggestions proposed by GSP/Taqadum for immediate solutions:

- 1- Increase sewer collection fees imposed on citizens.
- 2- The district center is in the final stage of completing all sewer projects. Accordingly there is a need to follow-up the correct completion of projects depending on modern methods to achieve good future results such as projecting project according to coordinates on maps for easy access during maintenance, and minimizes overlaps with all future projects.
- 3- Conduct a questionnaire to know citizens' opinions about services delivered to them and compare results to identify and correct weaknesses.
- 4- Conduct preventive and regular maintenance to identify and correct weaknesses, and accordingly deliver best services to citizens.
- 5- Vest the directorate of Sewer in Al-Najaf district center more authorities to achieve objectives.
- 6- The directorate shall activate and use GIS system to project projects in order to solve problems, propose suggestions to carry out future projects in an easy way and minimize overlaps amongst projects.
- 7- Provide networks leakage detectors and use GPS for tracking.
- 8- Provide protection devices for the safety of maintenance and stations workers.
- 9- Conduct campaigns to increase the awareness of citizens to reduce illegal uses and unauthorized connection to heavy water and stormwater networks and not to throw industrial wastes such as vehicles oil in sewers , and this negatively affects the bacteria which treats heavy water.

- 10- Make use of treated sludge and sell it as natural fertilizer to farmers, and accordingly providing an additional income for the directorate.
- 11- Complete Al-Najaf sea treatment station (under construction) as soon as possible, where the amount of wastewater reaching to the three working stations exceeds the design capacity. Accordingly, they can not treat waste water in an effective way.
- 12- It is not allowed to exceed the design capacity of the working stations, until the completion of the new one, by using Bypass because the heavy water treatment is a biological process and can not be accelerated.
- 13- If the amount of inflows exceeds the design capacity of the stations, the number of bacteria and its efficiency will be reduced.

Conclusion

It is important that the Directorate of Sewer manage its works in an effective and efficient way in order to provide better services to citizens using available resources. Further, the Directorate should develop a realistic strategic plan and feasibility studies for projects to be implemented in order to reduce gaps in service standards, leading to better services.

Lastly, the Directorate of Sewer should be enabled to find financial resources to support its operational budget and assist it in enforcing applicable laws to prevent illegal uses to the sewer network.

Standards of assessment of sewer disposal service delivery

Item	Standard	Description	Unit of standard	Needed information to measure the standard	Description	Unit of measurement
1	Level of coverage by sewer disposal networks	This standard represents extension of embedded sewer disposal networks to include each house or facility whether trading, industrial and other facilities in the district	%	A. total number of housing units or facilities in the district	Housing units or facilities that are registered with directorates of real estate registration or those to whom construction permits were issued	Number
				B. total number of housing units or facilities that have direct connection with network of sewer disposal	Housing units and facilities that are subscribed or connected with network of sewer disposal Housing units and facilities that are connected with network of rainwater discharge or these with open discharge channels are not counted	Number
				Periodical updating $100 \times \frac{B}{A} =$ indicator calculation		%

2	Efficiency of the network to discharge wastewater	This standard measures quantity of wastewater that is discharged through the network in proportion to total quantity of water provided through water networks to citizens within area of service	%	A. Quantity of water provided to citizens on a monthly or daily basis	Measure the quantity of product on a monthly or daily basis which is pumped into the network on a daily basis with daily measurement taking into consideration losses in the network or carrier lines (25% in minimum)	Million litres on a monthly or daily basis
				B. quantity of wastewater discharged through the network	Quantity of wastewater at entrance of treatment projects	Million litres on a monthly or daily basis
				$\left(\frac{B}{A} \times 0.75\right) \times 100 =$ indicator calculation		%
3	capability to treat wastewater	Capability of secondary treatment of wastewater produced from use of water supplied by water projects	%	A. quantity of water supplied to citizens through the network on a monthly or daily basis	Measure the quantity of product on a monthly or daily basis which is pumped into the network on a daily basis with daily measurement taking into	Million litres on a monthly or daily basis

					consideration losses in the network or carrier lines (estimated 25% in minimum)	
				B. real capacity of treatment of wastewater	Calculate the real capacity of wastewater treatment projects within the same month	Million litres on a monthly or daily basis
				Annual update $\left(\frac{B}{A} \times 0.75\right) \times 100 =$ indicator calculation		%
4	efficiency of treatment of wastewater (BOD<20mg/l, TSS=60mg/l, COD<100mg/l, PH=6.5-8.5)	The efficiency of treatment of wastewater is measured through checking the percentage of samples inspected from secondary treatment output to see if they comply with or exceed the standards	%	A. total number of samples tested within a month	Number of samples drawn during a month from secondary treatment unit output by directorates of environment, health or any relevant authority within a period of month	Number
				B. total number of samples tested which comply with the standard specifications within the	Out of total number of samples drawn in the item above, number of samples tested and which comply with standard specifications	Number

				month		
				$Monthly\ update\ 100 \times \frac{B}{A}$ = indicator calculation		%
5	Efficiency of responding to people complaints	Total number of complaints concerning water supply which are addressed within 24 hours from receiving of complaint	%	A. total number of all complaints received from citizens during a month period	Complaints registered at office of complaints in effective systems of registration and tracking	Number
				B. total number of complaints considered and handled during a month period of time	The number of complaints handled in a sound and satisfactory manner during 24 hours or after a day from registering the complaint	Number
				$Monthly\ update\ 100 \times \frac{B}{A}$ = indicator calculation		%

S. No.	Standard	Description of standard	Standard value	Data required to measure the standard	Description	Unit of measurement
1	The extent of coverage of storm water discharge networks	This standard represents the percentage of streets covered with storm water networks out of lengths of total streets.	100%	a) Total length of streets in the coverage area.	Streets, with a width of 3.5 M, are considered	Km
				b) Total lengths of main and sub networks.	Buried and covered networks are counted only	Km
				Indicator calculation = $a/b \times 100$ (annual update)		%
2	Number of recorded flooding incidents	Number of flooding incidents due to rainfall which was registered in the services departments during a year	Number/year	a) Determine the number of flood potential points in the coverage area and number them as M1, M2, M3,.....	Flood Potential points are defined as areas that are exposed to a flood and which is estimated by experience. They are located in the main streets , intersections and streets longer than 100 m.	Number
				b) Number of registered flood incidents during a year	The number of floods affecting traffic or natural life recorded in each point M1, M2, M3,	Number
				Indicator calculation = number of floods in M1 + number of floods in		%

				M2 + number of floods in M3 (annual update)	
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s. No.	Standard	Description of standard	Standard value	Data required to measure the standard	Description	Unit of measurement
3	The extent of responding to citizens' complaints in an effective way	Total number of complaints concerning storm water which is addressed within 24 hours from receiving of complaint	80%	a) Total number of all complaints received from citizens during a month	Complaints registered at the citizens' service desk in effective systems of registration and tracking	Number
				b) Total number of complaints that are dealt with during a month	The number of complaints handled in a sound and satisfactory manner during 24 hours or after a day from registering the complaint	Number
				Indicator calculation = $a/b \times 100$ <i>quarterly updated</i>		%