



Verification Report for

Project : Artificial Wetland Groundwater Recharge Project by
ZIPL, Gujarat, India.

UWR Project ID : 414

Name of Verifier	SQAC Certification Pvt. Ltd.
Date of Issue	February 05, 2024
Project Proponent	Zydus Infrastructure Pvt. Ltd. (ZIPL), Ahmedabad, Gujarat.
UWR Project Aggregator	Kapil Acharya
Work carried by	Mr. Santosh Nair
Work reviewed by	Mr. Praful Shinganapurkar

Summary:

SQAC Certification Pvt. Ltd. has performed verification of the “Artificial Wetland Groundwater Recharge Project by ZIPL, Gujarat, India”. The project activity involves the setup of groundwater recharge wetlands (man-made wetlands) that allow water to gradually percolate through the soil and recharge the aquifer within the project boundary. M/s. Zydus Infrastructure Pvt. Ltd (ZIPL or PP) has left many plots vacant within the SEZ to create such recharge wetlands in order to recharge groundwater with rainwater run-off through natural percolation. These recharge wetlands attract various species of migratory birds, hence helping promote biodiversity within the project boundary.

The project activity meets the following UN SDG's:



Verification for the period: **01/01/2014 to 31/12/2023 (10 years, 00 months)**



In our opinion, the total RoU's over the crediting / verification period stated in the Project Concept Note and Monitoring Report, PCNMR submitted to SQAC are found to be correct and in line with the UWR guidelines.

The verification was done onsite by way of site visit, interviews, document verification and submission through emails.

SQAC is able to certify that the RoU's from the Artificial Wetland Groundwater Recharge Project by ZIPL, Gujarat, India, (UWR ID – 414) for the period 01/01/2014 to 31/12/2023 amounts to **13,05,863** RoUs.

Detailed Verification Report:

The project activity is pre-approved under the UWR RoU program for the following scope:

- Scope 2 (Measures for conservation and storage of unutilized water for future requirements including freshwater ecosystems and wetlands).

Purpose:

M/s. Zydus Infrastructure Pvt. Ltd (ZIPL or PP) has employed this voluntary groundwater aquifer recharge via rainwater harvesting measure within the project boundary to ensure regular water supply and availability for future captive use during the industrial development within the SEZ. The PP maintains the wetland with a view to ensure sufficient water exists to maintain the desired level of their ecological health. Such project activities are an engineered sequence of water bodies designed to collect rainwater runoff and are an example of nature-based solutions to mitigate the impacts of climate change.





The artificial wetlands minimize ecological disturbance, thereby protecting the natural biodiversity of the SEZ. There were no water bodies within the project boundary site when the SEZ was commissioned in 2006.

Wetlands are areas where water covers the soil or is present either at or near the surface of the



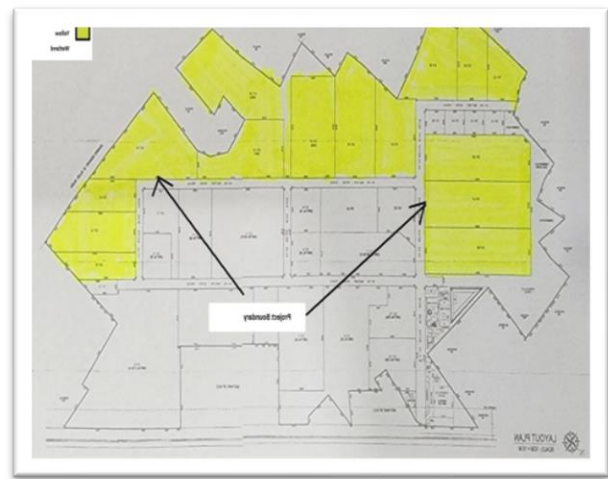
soil all year or for varying periods of time during the year, including during the growing season. Wetlands, such as the project activity, are amongst the most productive nature-based ecosystems for water conservation for the following reasons:

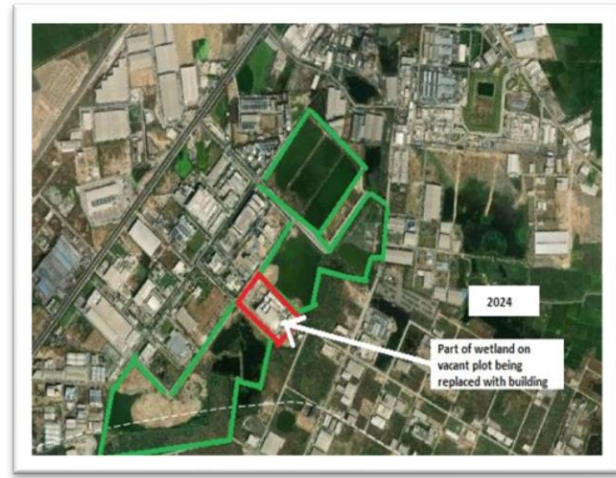
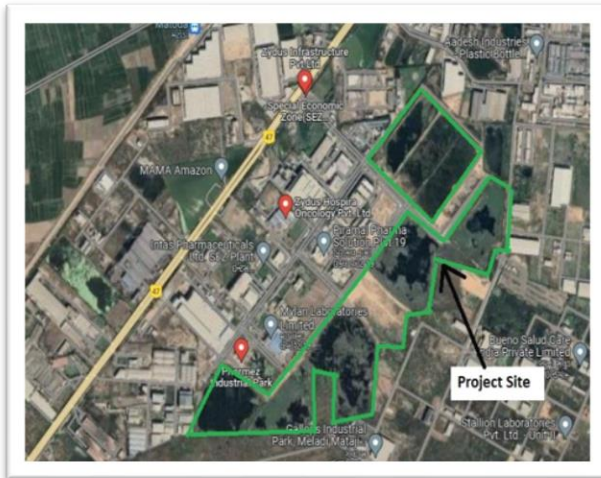
- They support and establish habitats for aquatic flora and fauna and support all forms of life under water.
- They filter sediments and nutrients from surface water, purify water and mitigate floods.
- They maintain stream flow, recharge groundwater and provide industrial water for future captive use.
- They control the rate of runoff in urban areas and provide natural buffer shorelines against erosion.
- They stabilize local climate and are an important centre for tourism and recreation, and
- They represent the floristic diversity of the area.

Eventually, all the vacant plots that are currently being operated as wetlands, will be developed with industrial units. The PP has voluntarily planned, designed and operated the wetlands to provide a range of services well beyond the primary aim of groundwater recharge, to include habitat and wildlife diversity, bird and wildlife watching, water storage during periods of shortage and excess, and aesthetic value in within the SEZ.

Project Location:



Project Name	: Artificial Wetland Groundwater Recharge Project by ZIPL, Gujarat, India.
Location of Project Activity	: PHARMEZ Special Economic Zone, Zydus Infrastructure Pvt. Ltd., Village: Matoda, Taluka: Sanand, District: Ahmedabad, Gujarat.
Latitude	: 22°52'49.25"N
Longitude	: 72°24'23.60"E










Sustainable Development Goals under the United Nation (UN-SDGDs):

The project activity achieves the following key water and sanitation related Sustainable Development Goals under the United Nation (UN-SDGDs):

Sustainable Development Goals Targeted	Most relevant SDG Target/Impact	Indicator (SDG Indicator)
 <p>13 Climate Action (mandatory)</p>	<p>13.2: Integrate climate change measures into national policies, strategies and planning.</p>	<p>The project activity acts as carbon sinks. The wetlands act as storm surge buffers and provides erosion control.</p>
 <p>1 - End poverty in all its forms everywhere</p>	<p>1.4: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and <u>other forms of property, inheritance, natural resources</u>, appropriate new technology and financial</p>	<p>The PP prevents unequal distribution of natural groundwater resources -which <u>prevents poverty of natural economic resources</u> (groundwater). The PP ensures that the citizens of Ahmedabad get a chance to preserve their natural groundwater resources for future generations since PP is recharging groundwater.</p>



	<p>services, including microfinance.</p>	
 <p>14- By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.</p>	<p>Conserve and sustainably use the oceans, seas and marine resources for sustainable Development.</p>	<p>The project activity helps stabilize the water cycle, carbon cycle and nutrient cycle which would otherwise be significantly altered. The wetlands are of critical importance to biodiversity and to the functioning of virtually all terrestrial and coastal ecosystems.</p> <p>The prolonged presence of water creates conditions that favor the growth of specially adapted plants (hydrophytes) and promote the development of characteristic wetland (hydric) soils.</p>
 <p>15 - Life on Land</p>	<p>Protect, restore and promote sustainable use of terrestrial ecosystems, halt and reverse land degradation and halt biodiversity loss.</p>	<p>The PP prevents global biodiversity loss.</p>
 <p>11 - Make cities and human settlements inclusive, safe, resilient and sustainable.</p>	<p>11.A: Support positive economic, social and environmental links between urban, peri urban and rural areas by strengthening national and regional development planning.</p>	<p>The project activity acts as a natural sponge absorbing rainfall, providing protection against coastal and river flooding to (partially) offset the need for man-made infrastructure. The project activity also helps reduce and regulate sediment transport thereby contributing to land formation and coastal zone</p>

		stability.
 <p>6 - Ensure access to water and sanitation for all.</p>	<p>6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.</p>	<p>Wetlands such as the project activity ensures fresh water availability, helps replenish ground aquifers, and purifies and filters harmful waste from water – such as fertilizers and pesticides, as well heavy metals and toxins from industry. The PP has showcased harvesting and recharging 1305 million litres of unutilized water during this monitored period.</p>
 <p>17 – Strengthen the means of implementation and revitalize the global partnership for sustainable development</p>	<p>17.7: Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favorable terms including on concessional and preferential terms, as mutually agreed.</p>	<p>PP will monetize the water credits via the virtual water footprint market internationally.</p>

Scope:

The scope covers verification of RoUs from the project - Artificial Wetland Groundwater Recharge Project by ZIPL, Gujarat, India, (UWR ID – 414)

Criteria:

Verification criteria is as per the requirements of UWR RoU program for the scope – 2.



Description of project:

Artificial wetlands and ponds, filled with static water, play a crucial role in maintaining the ecological balance, by acting as a home to birds and animals, while also playing a key role in absorbing rainwater, thus controlling floods.

As regards the overall capacity of water body, the PP has confirmed that total area covered by water bodies is 48 hectares. Since it is a large area, the overall capacity is estimated based on the approximate depth for dug-out water bodies as four (4) feet. Based on the above calculation (48 Hectares i.e., 51,66,677 sq. ft X 4 feet), the overall capacity of wetland is 2,06,66,708 cubic feet (58.52 crore litres).

These artificial wetlands enhance the microclimate and improve the ground water table (and will effectively do so) till all the vacant plots are developed as part of the SEZ. Given the fact that most of the impacts of climate change in the country would be water mediated, the role of wetlands in climate change demands urgent attention and integration in the mitigation and adaptation strategies. As part of response narrative to protect & restore 100% of the existing water bodies, the PP has confirmed that there are two types of water bodies available at PHARMEZ - Artificial water pond and water retention pits.

Artificial water pond is specifically designed for hydroponic practices. It is located adjacent to the lounge and garden area. This pond is proposed to be maintained and retained for lifetime of the project and PHARMEZ is in process of building similar ponds in the near future. The vacant plots on the other hand, currently housing the artificial retention pits and wetlands that will be eventually occupied by buildings and commercial manufacturing units.

Secondly, the rainwater retention pits are formed as a result of unsold open plots that are being used for runoff water retention and groundwater recharge through natural percolation. These pits (as stated earlier) are a temporary measure to attempt water conservation practices. This confirms that the PP is committed to water conservation practices at each and every part of the SEZ to minimize ecological disturbance, thereby protecting the natural habitats. The commissioning date is 2012 for the project activity.

Biodiversity is supplemented by the PP with an afforestation program within the project boundary wherein a total of 28,500 trees and saplings have been planted since 2015 till date. Such measures restore site specific fauna within the project boundary.

Faunal species recorded in the study area includes 8 types of mammals, 10 types of birds and 7 types of Reptiles. None of the sighted animal species can be assigned endemic species



category of the study area.

The most commonly spotted bird species within the project activity are Cattle Egret, Purple Heron, Pond Heron, Black Ibis, Blue Rock Pigeon and Ring Dove.

The project activity also attracts bird species that are under the protected list as follows:

- Sarus crane, (Antigone Antigone) and Woolly-necked Stork (*Ciconia episcopus*) which are in vulnerable category as per the IUCN red list.
- Black-headed Ibis (*Threskiornis melanocephalus*) and Oriental Darter (*Anhinga melanogaster*) are grouped under near threatened category of IUCN.
- Some birds, reptiles and mammals within the project activity are also protected by the Indian Wildlife (Protection) Act, 1972 under different schedules.

The project activity qualifies under the UWR RoU program since the PP has undertaken measures for conservation and storage of unutilized water for future requirements via wetlands. Human-made non-state wetlands on private land are also approved under the UWR standard.

The project activity showcases best-in-class preservation measures that need to be undertaken for the groundwater-dependent ecosystems in the state, since water retention at the local recharge areas of the wetlands helps in the mitigation of water level decline under present-day conditions.

Baseline scenario

The baseline scenario is the situation where, in the absence of the project activity, the PP would have not constructed artificial retention pits and rainwater runoff would be diverted to existing the storm water drains that currently already facilitate the collection of rainwater runoff from the hardscape areas (roads, pedestrian pathways). The slope of storm water drain is directed from the far ends of the SEZ towards the main gate, where it meets the city storm drain at the main road and hence no groundwater recharge would occur within the project boundary.

Hence the baseline scenario is:

“the net quantity of rainwater runoff captured/harvested each year and/or transmitted towards groundwater recharging.”



Level of Assurance / Verification Methodology:

The verification report is based on onsite audit, information collected through interviews, supporting documents provided during the verification, Project Concept Note - Monitoring Report (PCNMR) submitted to SQAC. The verification opinion is assured provided the credibility of all the above.

Verification is done as per the requirements of UWR RoU program for the scope – 2.

Review of the following documentation was done by SQAC Verifier, Mr. Santosh Nair who is experienced in such projects.

- Project Concept Note / Monitoring Report (PCNMR)
- Land procurement records
- Master Plan Layout
- Average yearly rainfall data
- Data provided upon request of all the documents of the related project.

Sampling:

Not applicable

Persons interviewed:

1. Mr. Kapil acharya : General Manager – Operations, M/s Zydus Infrastructure Pvt. Ltd.
2. Mr. Bhavesh Thaker : Manager, M/s Zydus Infrastructure Pvt. Ltd.

State Emergency Operation Centre, Revenue Department, Gandhinagar													
Rainfall Report 31/10/2015 (Rainfall in mm)													
Sr. No.	Dist.	Avg Rain (1985-2014)	Rains till Yester day	Rain During last 24 Hrs.	Total Rain fall	% Against Avg Rain	Sr. No.	Dist.	Avg Rain (1985-2014)	Rains till Yester day	Rain During last 24 Hrs.	Total Rain fall	% Against Avg Rain
1	2	3	4	5	6	7	1	2	3	4	5	6	7
KUTCH							East-CENTRAL GUJARAT						
1	Kutch						1	Ahmedabad					
1	Abdasa	377	259	0	259	68.76	1	Abad City	776	615	0	615	79.20
2	Anjar	398	899	0	899	225.86	2	Bavla	701	382	0	382	54.51
3	Bhachau	402	684	0	684	170.07	3	Dasroi	677	302	0	302	44.61
4	Bhuj	346	591	0	591	170.96	4	Detroj	645	515	0	515	79.79
5	Gandhidham	418	450	0	450	107.76	5	Dhandhuka	708	477	0	477	67.41
6	Lakhpat	335	434	0	434	129.70	6	Dholera	411	518	0	518	126.03
7	Mandvi(K)	410	406	0	406	98.96	7	Dholka	769	310	0	310	40.33
8	Mundra	469	288	0	288	61.47	8	Mandal	548	358	0	358	65.38
9	Nakhatrana	385	649	0	649	168.77	9	Sanand	759	701	0	701	92.33
10	Rapar	413	646	0	646	156.28	10	Viramgam	683	403	0	403	58.98
	Dist. Avg	387	531	0	531	137.11		Dist. Avg	648	458	0	458	70.69



State Emergency Operation Centre, Revenue Department, Gandhinagar
Rainfall Report 19/10/2016 (Rainfall in mm)

Sr.No.	District/ Taluka	Avg Rain (1986-2015)	Rains till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain	Sr. No.	District/ Taluka	Avg Rain (1986-2015)	Rains till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain		
1	2	3	4	5	6	7.00	1	2	3	4	5	6	7.00		
East-CENTRAL GUJARAT							East-CENTRAL GUJARAT								
8	Ahmedabad						12	Chhota Udepur							
1	Abad City	777	574	0	574	73.84	1	Bodeli	1074	1051	0	1051	97.86		
2	Bavla	701	453	0	453	64.64	2	Chhota Udepur	900	881	0	881	97.92		
3	Dasroi	681	416	0	416	61.10	3	Jetpur Pavi	1031	943	0	943	91.50		
4	Detroj	645	337	0	337	52.21	4	Naswadi	933	607	0	607	65.08		
5	Dhandhuka	704	514	0	514	72.97	5	Quant	928	762	0	762	82.14		
6	Dholera	411	442	0	442	107.54	6	Sankheda	1225	764	0	764	62.35		
7	Dholka	777	381	0	381	49.05	Dist. Avrg		1013	835	0	835	82.36		
8	Mandal	548	270	0	270	49.31	13	Panchmahal							
9	Sanand	772	524	0	524	67.89	1	Ghoghamba	886	780	0	780	88.01		
10	Viramgam	688	277	0	277	40.24	2	Godhra	844	911	0	911	107.93		
Dist. Avrg									670	419	0	419	62.47		
									3	Halol	1035	828	0	828	79.96

State Emergency Operation Centre, Revenue Department, Gandhinagar
Rainfall Report 03/11/2017 (Rainfall in mm)

Sr.No.	District/ Taluka	Avg Rain (1987-2016)	Rains till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain	Sr. No.	District/ Taluka	Avg Rain (1987-2017)	Rains till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain		
1	2	3	4	5	6	7.00	1	2	3	4	5	6	7.00		
East-CENTRAL GUJARAT							East-CENTRAL GUJARAT								
8	Ahmedabad						12	Chhota Udepur							
1	Abad City	776	1049	0	1049	135.18	1	Bodeli	1221	990	0	990	81.06		
2	Bavla	704	1024	0	1024	145.42	2	Chhota Udepur	902	916	0	916	101.55		
3	Dasroi	671	647	0	647	96.49	3	Jetpur Pavi	1029	836	0	836	81.28		
4	Detroj	644	644	0	644	100.06	4	Naswadi	921	557	0	557	60.50		
5	Dhandhuka	698	728	0	728	104.23	5	Quant	950	615	0	615	64.72		
6	Dholera	689	555	0	555	80.60	6	Sankheda	1211	1096	0	1096	90.48		
7	Dholka	764	491	0	491	64.28	Dist. Avrg		1012	835	0	835	82.54		
8	Mandal	581	468	0	468	80.59	13	Panchmahal							
9	Sanand	778	1007	0	1007	129.45	1	Ghoghamba	867	620	0	620	71.54		
10	Viramgam	674	594	0	594	88.13	2	Godhra	858	997	0	997	116.24		
Dist. Avrg									699	721	0	721	103.15		
									3	Halol	1023	1014	0	1014	99.08

State Emergency Operation Centre, Revenue Department, Gandhinagar
Rainfall Report 31/10/2018 (Rainfall in mm)

Sr.No.	District/ Taluka	Avg Rain (1988-2017)	Rains till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain	Sr. No.	District/ Taluka	Avg Rain (1988-2017)	Rains till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain		
1	2	3	4	5	6	7	1	2	3	4	5	6	7		
East-CENTRAL GUJARAT							East-CENTRAL GUJARAT								
8	Ahmedabad						12	Chhota Udepur							
1	Abad City	803	418	0	418	52.04	1	Bodeli	1240	656	0	656	52.89		
2	Bavla	725	377	0	377	52.00	2	Chhota Udepur	910	938	0	938	103.03		
3	Dasroi	685	245	0	245	35.74	3	Jetpur Pavi	1041	880	0	880	84.54		
4	Detroj	660	233	0	233	35.28	4	Naswadi	923	559	0	559	60.55		
5	Dhandhuka	717	395	0	395	55.11	5	Quant	949	701	0	701	73.90		
6	Dholera	701	366	0	366	52.20	6	Sankheda	1234	810	0	810	65.65		
7	Dholka	767	292	0	292	38.07	Dist. Avrg		1050	757	0	757	72.13		
8	Mandal	592	113	0	113	19.10	13	Panchmahal							
9	Sanand	805	304	0	304	37.78	1	Ghoghamba	873	637	0	637	72.95		
10	Viramgam	689	173	0	173	25.10	2	Godhra	876	979	0	979	111.82		
Dist. Avrg									714	292	0	292	40.84		
									3	Halol	1044	901	0	901	86.27

State Emergency Operation Centre, Revenue Department, Gandhinagar
Rainfall Report 30/11/2019 (Rainfall in mm)

Sr.No.	District/ Taluka	Avg Rain (1989-2018)	Rain till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain	Sr. No.	District/ Taluka	Avg Rain (1989-2018)	Rain till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain		
1	2	3	4	5	6	7	1	2	3	4	5	6	7		
East-CENTRAL GUJARAT							East-CENTRAL GUJARAT								
8	Ahmedabad						12	Chhota Udepur							
1	Abad City	793	852	0	852	107.45	1	Bodeli	1222	1576	0	1576	128.93		
2	Bavla	696	965	0	965	138.74	2	Chhota Udepur	899	2485	0	2485	276.38		
3	Dasroi	668	726	0	726	108.72	3	Jetpur Pavi	1043	1492	0	1492	143.01		
4	Detroj	634	496	0	496	78.18	4	Naswadi	915	1423	0	1423	155.50		
5	Dhandhuka	699	1095	0	1095	156.72	5	Quant	929	2445	0	2445	263.07		
6	Dholera	682	762	0	762	111.71	6	Sankheda	1221	1350	0	1350	110.56		
7	Dholka	735	935	0	935	127.27	Dist. Avrg		1014	1795	0	1795	177.09		
8	Mandal	562	441	0	441	78.52	13	Panchmahal							
9	Sanand	795	957	0	957	120.42	1	Ghoghamba	858	1026	0	1026	119.52		
10	Viramgam	661	498	0	498	75.32	2	Godhra	878	1199	0	1199	136.57		
Dist. Avrg									695	773	0	773	111.12		
									3	Halol	1044	1664	0	1664	159.44



8 - RAINFALL REPORT-ZONEWISE

Rainfall Report 10-11-2020 (Rainfall in mm)

Sr.No.	District/ Taluka	Avg Rain (1990-2019)	Rain till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain	Sr. No.	District/ Taluka	Avg Rain (1990-2019)	Rain till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain
1	2	3	4	5	6	7	1	2	3	4	5	6	7
East-CENTRAL GUJARAT							East-CENTRAL GUJARAT						
8	Ahmedabad						12	Chhota Udepur					
1	Abad City	798	925	0	925	115.94	1	Bodeli	1238	1103	0	1103	89.08
2	Bavla	704	560	0	560	79.58	2	Chhota Udepur	944	1161	0	1161	122.93
3	Dasroi	668	514	0	514	76.96	3	Jetpur Pavi	1074	1302	0	1302	121.28
4	Detroj	634	489	0	489	77.09	4	Naswadi	931	878	0	878	94.30
5	Dhandhuka	712	801	0	801	112.49	5	Quant	973	966	0	966	99.24
6	Dholera	684	683	0	683	99.80	6	Sankheda	1229	946	0	946	76.95
7	Dholka	742	817	0	817	110.14		Dist. Avg.	1042	1059	0	1059	101.64
8	Mandal	560	445	0	445	79.51	13	Panchmahal					
9	Sanand	805	915	0	915	113.74	1	Ghoghamba	865	921	0	921	106.54
10	Viramgam	661	616	0	616	93.18	2	Godhra	878	836	0	836	95.20
	Dist. Avg.	699	677	0	677	96.80	3	Halol	1067	1456	0	1456	136.41

8 - RAINFALL REPORT-ZONEWISE

Rainfall Report 30-11-2021 (Rainfall in mm)

Sr.No.	District/ Taluka	Avg Rain (1991-2020)	Rain till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain	Sr. No.	District/ Taluka	Avg Rain (1991-2020)	Rain till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain
1	2	3	4	5	6	7	1	2	3	4	5	6	7
East-CENTRAL GUJARAT							East-CENTRAL GUJARAT						
8	Ahmedabad						12	Chhota Udepur					
1	Abad City	795	561	0	561	70.56	1	Bodeli	1219	1023	0	1023	83.95
2	Bavla	689	424	0	424	61.56	2	Chhota Udepur	943	1431	0	1431	151.76
3	Dasroi	651	558	0	558	85.75	3	Jetpur Pavi	1064	1086	0	1086	102.05
4	Detroj	612	381	0	381	62.29	4	Naswadi	912	850	0	850	93.17
5	Dhandhuka	715	619	0	619	86.56	5	Quant	965	1290	0	1290	133.62
6	Dholera	684	738	0	738	107.97	6	Sankheda	1205	845	0	845	70.15
7	Dholka	735	669	0	669	90.96		Dist. Avg.	1028	1088	0	1088	105.76
8	Mandal	536	359	0	359	67.04	13	Panchmahal					
9	Sanand	805	641	0	641	79.58	1	Ghoghamba	848	488	0	488	57.53
10	Viramgam	643	365	0	365	56.79	2	Godhra	854	806	0	806	94.33
	Dist. Avg.	689	532	0	532	77.12	3	Halol	1067	942	0	942	88.26

8 - RAINFALL REPORT-ZONEWISE

Rainfall Report 30-11-2022 (Rainfall in mm)(Dt.29-11.2022 06:00 am to Dt.30.11.2022 06:00 am)

Sr.No.	District/ Taluka	Avg Rain (1992-2021)	Rain till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain	Sr. No.	District/ Taluka	Avg Rain (1992-2021)	Rain till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain
1	2	3	4	5	6	7	1	2	3	4	5	6	7
East-CENTRAL GUJARAT							East-CENTRAL GUJARAT						
8	Ahmedabad						12	Chhota Udepur					
1	Abad City	796	1009	0	1009	126.80	1	Bodeli	1219	1408	0	1408	115.52
2	Bavla	688	433	0	433	62.98	2	Chhota Udepur	968	1041	0	1041	107.57
3	Dasroi	643	519	0	519	80.72	3	Jetpur Pavi	1055	1192	0	1192	113.01
4	Detroj	600	340	0	340	56.69	4	Naswadi	917	810	0	810	88.33
5	Dhandhuka	724	750	0	750	103.53	5	Quant	985	1418	0	1418	143.89
6	Dholera	697	585	0	585	83.96	6	Sankheda	1199	1201	0	1201	100.18
7	Dholka	742	631	0	631	84.99		Dist. Avg.	1033	1178	0	1178	114.07
8	Mandal	523	437	0	437	83.56	13	Panchmahal					
9	Sanand	806	467	0	467	57.95	1	Ghoghamba	844	540	0	540	64.01
10	Viramgam	630	341	0	341	54.10	2	Godhra	859	1000	0	1000	116.40
	Dist. Avg.	687	551	0	551	80.18	3	Halol	1065	939	0	939	88.13



8 - RAINFALL REPORT-ZONEWISE

Rainfall Report 29-11-2023 (Rainfall in mm)(Dt.28.11.2023 06:00 am to Dt.29.11.2023 06:00 am)

Sr.No.	District/ Taluka	Avg Rain (1993-2022)	Rain till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain	Sr. No.	District/ Taluka	Avg Rain (1993-2022)	Rain till Yesterday	Rain During last 24 Hrs.	Total Rainfall	% Against Avg Rain
1	2	3	4	5	6	7	1	2	3	4	5	6	7
East-CENTRAL GUJARAT							East-CENTRAL GUJARAT						
8	Ahmedabad						12	Chhota Udepur					
1	Ahmedabad City	810	836	0	836	103.17	1	Bodeli	1228	1147	0	1147	93.40
2	Bavla	685	345	0	345	50.35	2	Chhota Udepur	974	1369	0	1369	140.54
3	Daskroi	645	451	0	451	69.90	3	Jetpur Pavi	1068	1183	0	1183	110.77
4	Detroj-rampura	596	326	0	326	54.69	4	Nasvadi	921	627	0	627	68.08
5	Dhandhuka	723	904	0	904	125.01	5	Kavant	1004	934	0	934	93.03
6	Dholera	690	721	0	721	104.49	6	Sankheda	1201	1135	0	1135	94.49
7	Dholka	747	403	0	403	53.97		Dist. Avg.	1066	1066	0	1066	99.98
8	Mandal	522	409	0	409	78.29	13	Panchmahal					
9	Sanand	804	527	0	527	65.51	1	Ghoghamba	841	554	0	554	65.87
10	Viramgam	627	397	0	397	63.36	2	Godhra	864	1287	0	1287	148.97
	Dist. Avg.	685	532	0	532	77.65	3	Halol	1072	937	0	937	87.44

Revenue Dept Year/Rainfall (mm)	Ahmedabad	Sanand
2015	615	701
2016	574	524
2017	1049	1007
2018	418	304
2019	852	957
2020	925	915
2021	561	641
2022	1009	467
2023	836	527

Corrective Action Requests (CARs)

Not applicable as no non-conformities has been evidenced.

Applied methodologies:

Verification criteria is as per the requirements of UWR RoU program for the scope – 2.

Applicability of double counting emission reductions

Currently not applicable for water credits.

Issuance Period: (10 years, 00 months) – 01/01/2014 to 31/12/2023

According to the UWR RoU Standard principles, the project activity accomplishes the following:



- ❖ Increases the sustainable water yield in areas where over development has depleted the aquifer
- ❖ Collect unutilized water or rainwater and preserve it for future use
- ❖ Conserve and store excess water for future use

Quantification Tools

Harvested water or Volume of water utilized (m³) = Area of Catchment / Roof / Collection Zone (m²) X Amount of rainfall (mm) X Runoff coefficient *Uncertainty Factor

Type of Area	Recommended Runoff Coefficient (K)
Commercial & Industrial	0.9 (source UWR RoU Standard)

Plot Number	Area (m ²)	Comments
15	15808	
16	27592	
17	16151	
18	44656	
19	30874	
20	56909	
21	37065	Developed into commercial in 2021
22	37497	
23	28028	
24	20994	
26	40327	
27	40322	
28	40059	
33	14091	
34	19361	
35	28139	
Total Area (m²)	497873	Up to year 2020
Total Area (m²)	460808	From year 2021 to 2023

Wetlands receive water directly when precipitation falls on the wetland or indirectly when precipitation falls outside the wetland and is transported to the wetland by surface or groundwater flow.



Indiawris- Yearly rainfall (in mm) trends for Ahmedabad from 01-Jan-2014 to 31-Dec-2022			Rainfall Selected Conservative (Lower) mm
Dates	NORMAL (mm)	ACTUAL (mm)	(mm)
2014	694.9	580.2	580.2
2015	694.9	422.25	422.25
2016	694.9	333.54	333.54
2017	694.9	579.16	579.16
2018	694.9	688.65	304
2019	694.9	4787.93	852
2020	694.9	947.96	915
2021	694.9	699.89	561
2022	694.9	330.21	330.21
2023			527

Year	Catchment (m ²)	Total (m ³)	Degree of Uncertainty Applied (RoUs Generated)
2014	497873	259979323.1	142988
2015	497873	189204186.8	104062
2016	497873	149454504.4	82199
2017	497873	259513314	142732
2018	497873	136218052.8	74919
2019	497873	381769016.4	209972
2020	497873	409998415.5	225499
2021	460808	232661959.2	127964
2022	460808	136947068.7	75320
2023	460808	218561234.4	120208
Total			1305863



Conclusions:

Based on the audit conducted on the basis of UWR Protocol, which draws reference from UWR RoU program, the documents submitted during the verification including the data, Project Concept Note (PCNMR), SQAC is able to certify that the Water Credits from the project -: Artificial Wetland Groundwater Recharge Project by ZIPL, Gujarat, India, (UWR ID – 414) for the period 01/01/2014 to 31/12/2023 amounts to **1305863 RoUs**.

Santosh Nair
Lead Verifier
(Signature)



Praful Shinganapurkar
Senior Internal Reviewer
(Signature)

Date: 05/02/2024