QUALIFICATION FILE

Soil Pollution Monitoring Specialist

☒ Short Term Training (STT) ☐ Long Term Training (LTT) ☐ Apprenticeship

☐ Upskilling ☐ Dual/Flexi Qualification For ToT ☐ For ToA

☒General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☐ Future Skills ☐ OEM

NCrF/NSQF Level: 5.5

Submitted By:

EIACP Cell, Ministry of Environment Forest and Climate Change (MoEFCC)

and

Skill Council for Green Jobs

Chief Executive Officer
CBIP Building, Malcha Marg,
Chanakyapuri, New Delhi – 110021
Contact no. and mail: 9899505533, ceo@sscgj.in

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Section 1: Basic Details

1.	**Qualification Name**	**Soil Pollution Monitoring Specialist**	
2.	**Sector/s**	**Environmental Science**	
3.	**Type of Qualification: ☒ New ☐ Revised ☐ Has Electives/Options ☐OEM**	**NQR Code & version of existing/previous qualification:** QG-5.5-ES-04263-2025-V1-SCGJ & version 1	**Qualification Name of existing/previous version:** NA
4.	**a. OEM Name** **b. Qualification Name** (Wherever applicable)	NA	
5.	**National Qualification Register (NQR) Code &Version**	QG-5.5-ES-04263-2025-V1-SCGJ & version 1	**6. NCrF/NSQF Level:** 5.5
7.	**Award (Certificate/Diploma/Advance Diploma/ Any Other**	Certificate	
8.	**Brief Description of the Qualification**	The Soil Pollution Monitoring Specialist monitors and manages soil health by analyzing composition, quality, and pollution levels. The role includes soil classification, sampling, and data analysis using statistical and GIS tools. Specialists also develop pollution mitigation strategies and promote advanced technologies for sustainable soil and environmental management.	
9.	**Eligibility Criteria for Entry for Student/Trainee/Learner/Employee**	**a. Entry Qualification & Relevant Experience:**	

Academic/Skill Qualification (with Specialization - if applicable)	**Required Experience (with Specialization - if applicable)**
UG Degree or equivalent in Environmental Science/Agriculture/soil science/Environmental Engineer/Chemistry	NA
UG Diploma or equivalent in Environmental Science/Agriculture/soil science/Environmental Engineer/Chemistry	With 1.5 years of Relevant experience in Environmental science/ NABL Accredited-Testing Labs/ NABET Accredited- Labs
Previous relevant Qualification of NSQF Level 4.5	3 years of relevant experience in Environmental science/ NABL Accredited-Testing Labs/ NABET Accredited- Labs
Previous relevant Qualification of NSQF Level 5	1.5 years relevant experience in Environmental science

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<table>
<tr><td>10</td><td>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>20</td><td>11. Common Cost Norm Category:
I</td></tr>
<tr><td>12.</td><td>Any Licensing requirements for Undertaking Training on This Qualification (wherever applicable)</td><td colspan="2">NA</td></tr>
<tr><td>13.</td><td>Training Duration by Modes of Training Delivery (Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</td><td colspan="2">☒Offline ☐Online ☐Blended
<table>
<tr><th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>OJT Mandatory (Hours)</th><th>OJT Recommended (Hours)</th><th>Total (Hours)</th></tr>
<tr><td>Classroom (offline)</td><td>200 hours with Employability Skills</td><td>190</td><td>210</td><td></td><td>600</td></tr>
<tr><td>Online</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
(Refer Blended Learning Annexure for details)</td></tr>
<tr><td>14.</td><td>Aligned to NCO/ISCO Code/s (if no code is available mention the same)</td><td colspan="2">2132.0300 (NCO, 2015), Soil Scientist
2132.0400 (NCO, 2015), Soil Conservationist
3111.0200 (NCO, 2015), Laboratory Assistant Soil
2143.0500 (NCO, 2015), Pollution Control Engineer</td></tr>
<tr><td>15.</td><td>Progression path after attaining the qualification (Please show Professional and Academic progression)</td><td colspan="2">Vertical Progression: Pollution control manager/Consultant</td></tr>
<tr><td>16.</td><td>Other Indian languages in which the Qualification & Model Curriculum are being submitted</td><td colspan="2">Hindi</td></tr>
<tr><td>17.</td><td>Is similar Qualification(s) available on NQR-if yes, justification for this qualification</td><td colspan="2">☐ Yes ☒ No</td></tr>
</table>

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18.	**Is the Job Role Amenable to Persons with Disability**	☒ **Yes** ☐ **No** **If "Yes", specify applicable type of Disability:** ☒ **Deaf** ☒ **Hard of Hearing** ☒ **Acid Attack Victims** ☒ **Dwarfism** *Opportunity to Locomotor Disabled persons and Hearing impaired persons may be considered.*	
19.	**How Participation of Women will be Encouraged**	Selection of the participants will be done as per the eligibility criteria without any gender bias	
20.	**Are Greening/ Environment Sustainability Aspects Covered** (Specify the NOS/Module which covers it)	☒ **Yes** ☐ **No** All modules except Employability are having Greening/ Environment Sustainability Aspects Covered	
21.	**Is Qualification Suitable to be Offered in Schools/Colleges**	**Schools** ☐ **Yes** ☒ **No** **Colleges** ☒ **Yes** ☐ **No**	
22.	**Name and Contact Details of Submitting / Awarding Body SPOC** (In case of CS or MS, provide details of both Lead AB & Supporting ABs)	**Name:** Mr. Arpit Sharma **Email:** ceo@sscgj.in **Contact No.:** 9899505533 **Website:** **https://sscgj.in/**	
23.	**Final Approval Date by NSQC:** 08-05-2025	**24. Validity Duration:** 3 years	**25. Next Review Date:** 07-05-2028

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Section 2: Module Summary

S. No	NOS/Module Name	NOS/Module Code & Version *(if applicable)*	Core/ Non-Core	NCrF/NSQF Level	Credits as per NCrF	Training Duration (Hours)					Assessment Marks					
						Th.	Pr.	OJT-Man.	OJT-Rec.	Total	Th.	Pr.	Proj.	Viva	Total	Weightage (%) *(if applicable)*
1.	Introduce Soil Composition, Quality, and Health Implications	SGJ/N6901	core	5.5	2	30	30		-	60	64	36	-	-	100	20
2.	Assess and Classify Soil Properties	SGJ/N6902	core	5.5	4	50	70		-	120	45	55	-	-	100	20
3.	Identify techniques for Soil Sampling and Ensuring Quality Standards	SGJ/N6903	core	5.5	2	30	30		-	60	58	42	-	-	100	20
4.	Apply Statistical and GIS Tools in Soil Analysis	SGJ/N6904	core	5.5	1	10	20		-	30	60	40	-	-	100	20
5.	Prepare Strategies for Soil Pollution Mitigation and Adoption of Advanced Technologies	SGJ/N6905	core	5.5	2	20	40		-	60	60	40	-	-	100	10
6.	Employability Skills (ES)	DGT/VSQ/N0102	Non-core	4	2	60	-		-	60	20	30	-	-	50	10
7.	On the Job Training			5.5	7	-	-	210	-	210	-	-	-	-	-	-
Duration (in Hours) / Total Marks			-	-	20	**200**	**190**	**210**		**600**	-	-	-	-	**550**	100

NOS/s of Qualifications

(In exceptional cases these could be described as components)

Mandatory NOS/s:

Specify the training duration and assessment criteria at NOS/ Module level. For further details refer curriculum document.

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***Th.**-Theory **Pr.**-Practical **OJT**-On the Job **Man.**-Mandatory Training **Rec.**-Recommended **Proj.**-Project*

Assessment - Minimum Qualifying Percentage

Minimum Pass Percentage – Aggregate at qualification level: 70 % *(Every Trainee should score specified minimum aggregate passing percentage at qualification level to successfully clear the assessment.)*

Section 3: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	The minimum educational qualification required is M.Sc. in Environmental Sciences, Agriculture Sciences, Agriculture, Life Sciences, or Chemistry. The candidate should have at least **2 years of relevant industry experience**, preferably in **laboratory work or equivalent fields**, and must be **ToT (Training of Trainers) certified**.
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** *(as per NCVET guidelines)*	**Ph.D. degree, preferably in Environmental Sciences or Soil Sciences**, or an equivalent qualification, and should be **ToT certified**.
3.	**Tools and Equipment Required for Training**	☒Yes ☐No (*If "Yes", details to be provided in Annexure)*
4.	**In Case of Revised Qualification, Details of Any Upskilling Required for Trainer**	Not Applicable

Section 4: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	The minimum educational qualification required is M.Sc. in Environmental Sciences, Agriculture Sciences, Agriculture, Life Sciences, or Chemistry. The candidate should have at least **4 years of relevant industry experience**, preferably in **laboratory work or equivalent fields**, and must be **ToT (Training of Trainers) certified**.
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	**Ph.D. degree, preferably in Environmental Sciences or Soil Sciences**, or an equivalent qualification, and should be **ToT certified**. In addition, the candidate must have a **minimum of 1 year of relevant industry experience** in a related field.
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(as per NCVET guidelines)*	M.Sc. with 5 years relevant laboratory experience or equivalent and ToT certified
4.	**Assessment Mode** *(Specify the assessment mode)*	Online and offline both

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5.	**Tools and Equipment Required for Assessment**	☒ Same as for training ☒ Yes ☐ No *(details to be provided in Annexure-if it is different for Assessment)*

Section 5: Evidence of the need for the Qualification

Provide Annexure/Supporting documents name.

1.	**Latest Skill Gap Study (not older than 2 years) (Yes/No):** Yes Soil pollution is one of the biggest issues not only in India but worldwide. Soil pollution is a major threat to agriculture ecosystems and the environment, including water resources. The Policy Statement for Abatement of Pollution adopted in 1992 by Government of India lays emphasis on pollution prevention in place of the conventional end-of-the-pipe treatment and identified the adoption of the best available and practicable technologies as the key element for pollution assessment, prevention, and control. India is having The Air (Prevention and Control of Pollution) Act, 1981, and the Water (Prevention and Control of Pollution) Act, 1974 for maintaining or restoring the wholesomeness of atmosphere and hydrosphere in the country. But soil, being a vital resource for the country, is also equally important At the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP), 2015 in Paris, India joined the voluntary Bonn Challenge pledge to bring into restoration 13 million hectares (mha) of degraded and deforested land by the year 2020, and additional 8 mha by 2030. This pledge to restore of 21 m.ha by 2030 has been increased to 26 mha, during the COP14 to the United Nations Convention to Combat Desertification (UNCCD) in 2019. In the above context, soil pollution monitoring and assessment become the most important aspect. However, there is a shortage of skilled manpower in pollution control boards, soil testing laboratories, and industries across the country with reference to soil pollution monitoring. The present course will provide the technical and qualitative skills necessary for soil pollution monitoring qualification. Further, under the Programme for Restoration, Awareness, Nourishment, and Amelioration of Mother Earth (PM-PRANAM), Soil Health Card Scheme under the National Project on Soil Health & Fertility of Rashtriya Krishi Vikas Yojana (RKVY), National Mission on Natural Farming (NMNF) of the MoAg&FW and EIA/EMP for pollution regulatory agencies, huge skilled workforce will be required in coming future.
2.	**Latest Market Research Reports or any other source (not older than 2 years) (Yes/No):** Yes Soil pollution has been internationally recognized as a major threat to soil health, and it affects the soil's inherent ability to provide ecosystem services, including the production of safe and sufficient food, compromising global food security. Soil pollution hinders the achievement of many of the United Nations Sustainable Development Goals (SDGs), including those related to poverty elimination (SDG 1), zero hunger (SDG 2), and good health and well-being (SDG 3). Soil pollution is vulnerable to the supply of safe drinking water due to the leaching of soil contaminants into groundwater and surface runoff to nearby waterbodies (SDG 6). Soil pollution contributes to land degradation and loss of terrestrial (SDG 15) and aquatic (SDG 14) biodiversity, and decreased the security and resilience of cities (SDG 11), among others (FAO and UNEP 2021, Global Assessment of Soil Pollution: Report url: https://www.unep.org/resources/report/global-assessment-soil-pollution). There is an estimate that the Soil Treatment Market size is expected to grow from USD 41.89 billion in 2023 to USD 54.78 billion by 2028, at a CAGR of 5.51% during the forecast period (2023-2028) (https://www.mordorintelligence.com/industry-reports/soil-treatment-market; Soil Monitoring Market | Size, Share, Growth | 2022 - 2027

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	(marketdataforecast.com)}. Thus, an urgent need for skilled manpower/ professionals who have expertise in soil pollution monitoring, assessment and remediation. The agro-food industries, industries complying with EIA/EMP, soil testing laboratories of pollution control boards and agriculture are few platforms needing skilled manpower in the country and abroad.
3.	**Government /Industry initiatives/ requirement (Yes/No):** Yes The course has been developed by Ministry of Environment, Forest and Climate Change
4.	**Number of Industry validation provided:** 14 Provided in the annexure
5.	**Estimated nos. of persons to be trained and employed:** 60 candidates per year (based on availability of funds)
6.	**Evidence of Concurrence/Consultation with Line Ministry/State Departments:** Developed and Concurred by Ministry of Environment, Forest and Climate Change, GoI

Section 6: Annexure & Supporting Documents Check List

Specify Annexure Name / Supporting document file name

1.	**Annexure:** NCrF/NSQF level justification based on NCrF level/NSQF descriptors *(Mandatory)*	Annexure: Evidence of Level
2.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory, except in case of online course)*	Annexure: Tools and Equipment (Lab Set-Up)
3.	**Annexure:** Detailed Assessment Criteria *(Mandatory)*	Annexure: Detailed Assessment Criteria (Mandatory)
4.	**Annexure:** Assessment Strategy *(Mandatory)*	Annexure: Assessment Strategy
5.	**Annexure:** Acronym and Glossary *(Optional)*	Annexure: Acronym and Glossary
6.	**Supporting Document:** Model Curriculum *(Mandatory – Public view)*	Attached
7.	**Supporting Document:** Career Progression *(Mandatory - Public view)*	Annexure: Career progression and OM
8.	**Supporting Document:** Occupational Map *(Mandatory)*	Annexure: Career progression and OM
9.	**Supporting Document:** Assessment SOP *(Mandatory)*	Annexure: Assessment Strategy

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Annexure 1: Evidence of Level

Title/Name of qualification/component: Soil Pollution Monitoring Specialist **Level: 5.5**			
NSQF Domain	**Outcomes of the Qualification/Component**	**How the outcomes relate to the NSQF level descriptors**	**NSQF Level**
Professional Theoretical Knowledge/ Process	Trainees would get a factual knowledge of the pollution sources, methodologies/ procedures, processing of raw data, operating and processing of analytical tools/ equipment for soil quality index.	The trainee would have professional knowledge about pollution source identification, developing action plans, quantifying action plan measures, and evaluating and reporting action plans. They would be able to execute standard operating procedures pertaining to the sampling tools/techniques and monitoring techniques. They would be aware of different mitigation measures and policies.	5.5
Professional and Technical Skills/ Expertise/ Professional Knowledge	The trainees should have hands-on skills in sampling and analytical techniques, interpretation of data generated, etc.	The trainee would have the professional skill to operate all kinds of analytical equipments. They would be able to analyze and present data and generate reports.	5.5
Employment Readiness & Entrepreneurship Skills & Mind-set/Professional Skill	Trainee would get advanced knowledge of soil pollution sources, monitoring techniques, sample collections and data analysis giving an interpretation towards a better quality and possible mitigation options of contamination.	The trainees would know different types of soil contaminants, their sources and their effects (environmental, economic and health). They would gain knowledge and skills in monitoring, assessment and remediation of soil pollution. Trainees will be ready for employment and entrepreneurship.	5.5
Broad Learning Outcomes/Core Skill	In terms of core skills, trainees would gain advanced knowledge of soil pollution management skills and techniques along with mitigation measures and policies/rules. Trainees would also gain basic knowledge of computational analysis, RS-GIS, and other related software.	The trainee would be able to perform, execute and manage the activities related to the management of soil pollution. Trainees will be able to do the RS-GIS-based geotagging and geo-referencing soil pollution data generation and application of statistical modeling for data analysis.	5.5
Responsibility	Trainees can independently initiate sampling, handle analytical instruments, analyze data.	The trainees would be able to perform soil quality assessments by using data and statistical techniques. They would also be responsible for the development of a group of master trainers/specialists.	5.5

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Annexure 2: Tools and Equipment (Lab Set-Up)

List of Tools and Equipment

Batch Size: 20 and 30

S. No.	Tool / Equipment Name		Specification	Quantity for specified Batch size 20	Quantity for specified Batch size 30
1	Sampling Tools	Sample containers (plastic bags, jars)	As per Industry Specification	20	30
		Sample labels and	As per Industry Specification	20 pack	30 pack
2.	Plastic-ware	Centrifuge tube round-bottom (50 mL)	As per Industry Specification	20 pack	30 pack
		Plastic Jars (1000mL)	As per Industry Specification	5	8
		Wash bottle	As per Industry Specification	20	30
3.	Tools used in sample preparation	Drying Oven (Forced air)	As per Industry Specification	1	1
		Sieves	As per Industry Specification	5	8
		Mortar and pestle or soil grinder	As per Industry Specification	5	8
		Electronic weighing balance (4-digit)	As per Industry Specification	2	4
		Desiccator	As per Industry Specification	5	8
4.	Glass-ware	Graduated measuring cylinder (10mL, 25mL, 50mL, 100mL, 250mL, 500mL, 1000mL)	As per Industry Specification	5 each	8 each
		Beaker (25mL, 50mL, 100mL, 250mL)	As per Industry Specification	5 each	8 each
		Erlenmeyer (conical) flask (50, 100, 500 and 1000 mL)	As per Industry Specification	20 each	30 each

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		String rods	As per Industry Specification	5	8
		pH meter	As per Industry Specification	1	1
		Conductivity meter	As per Industry Specification	1	1
5	Equipment used in chemical analysis	Autoclave	As per Industry Specification	1	1
		UV-Visible Spectrophotometer	As per Industry Specification	1	1
		Flame photometer	As per Industry Specification	1	1
		Digestion block	As per Industry Specification	1	1
		Distillation unit	As per Industry Specification	1	1
		Titration equipment (burettes, pipettes)	As per Industry Specification	5	8
		Water bath	As per Industry Specification	1	1
		Hot plate with magnetic stirrer	As per Industry Specification	5	8
6	General Lab Supplies	Filter paper	As per Industry Specification	20	30
		Funnel	As per Industry Specification	20	30
		Spatula	As per Industry Specification	5	8
		Test-tube rack	As per Industry Specification		
		Gloves	As per Industry Specification	5 pack	10 pack
		Lab coat	As per Industry Specification	20	30
7	Chemicals used in soil analysis	Buffer solutions (pH 4, 7, 10) (500 mL)	As per Industry Specification	1	1
		Standard conductivity solutions (500 mL)	As per Industry Specification	1	1
		Potassium dichromate (500g)	As per Industry Specification	2	4
		Sulphuric acid (2.5 L)	As per Industry Specification	2	4
		Ferrous ammonium sulphate (500 g)	As per Industry Specification	2	4
		Boric acid (500 g)	As per Industry Specification	2	4
		Acetone (2.5 L	As per Industry Specification	2	4

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		Urea (500 g)	As per Industry Specification	2	4
		Sodium salicylate (100 g)	As per Industry Specification	2	4
		Sodium nitroprusside dihydrate (100 g)	As per Industry Specification	2	4
		p-Nitrophenol (100 g)	As per Industry Specification	2	4
		Tris phosphate dibasic (500 g)	As per Industry Specification	2	4
		Trichloroacetic acid (500 g)	As per Industry Specification	2	4
		2,4-Dinitrophenol indicator (100 g)	As per Industry Specification	2	4
		p-Nitrophenyl phosphate disodium salt (100 g)	As per Industry Specification	2	4
		p-Nitrophenyl β D-galactopyranoside (100 g)	As per Industry Specification	2	4

Classroom Aids

The aids required to conduct sessions in the classroom are: Smart board Markers and Charts, Visual Aids, Projector

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Annexure 3: Industry Validations Summary

Provide the summary information of all the industry validations in table. This is not required for OEM qualifications.

S. No	Organization Name	Representative Name	Designation	Contact Address	Contact Phone No	E-mail ID	LinkedIn Profile *(if available)*
1	HTWOMINE SOLUTIONS PRIVATE LIMITED	Supriya Tirthkar	Director	Sr no. 21/3B, Ragoba Patil Nagar, Pune, Maharashtra	9.18391E+11	Supriya.tirthkar@gmail.com	
2	VACEN ENGINEERING AND SOLUTIONS PRIVATE LIMITED	Vibhutinath Pandey	Director	H-72-A, Second Floor, Kh No. 80/14, Mahavir Enclave, Palam, New Delhi-1100945	7503208625	vibhuti.vacen@gmail.com	
3	GD Goenka University	Vipul Pandey	AGM	GD Goenka Education City, Sohna Gurugram â€“ Haryana 122013	9149057199	vipul.pandey@gdgu.org	
4	Heemsol Energy System Pvt Ltd	Dipti Shah	Director	1st Floor Giriraj Complexs, Opp. Bank of Baroda, Ahmedabad, Gujarat-380013	-9898167641	dipti@heemenergy.com	
5	GORenewable Technology	Japen Gor	Managing Partner	214, Devpath Complex, B/H Lal Bungalow, Off C.G. Road, Ahmedabad, Gujarat-380009	-9099064257	japen@gorenewtech.com	
6	TAPSIL JATI ADIBASI PRAKTAN SAINIK KRISHI BIKASH SHILPA KENDRA	Soumen Koley	Secretary	Gentegory, Palashy, Dhaniakhali, Hooghly, West Bengal, 712303	9647690557 / 8860597565	s.n.koley20@gmail.com	
7	Chronic Foundation	Ramesh S	Chairman	No 55, Opp to Shanubhoganahally Lake, Chokkanahalli, Arekere Post, Bangalore North 562163	9845010306	ramesh@chronicfoundation.org	
8	Green Life Solution Pvt. Ltd.	Vikas Deshpande	General Manager - Sales	XI-74/6, Behind Priyadarshini	+91 9225332011		

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				Polytechnic, MIDC, Hingna Road, Nagpur â€“ 440 016			
9	Danao Green Tech Private Limited	Dr Sanjay Danao	Director	203, Sai Avenue, D-7, CIDCO Meghdoot, Butibori MIDC, Nagpur â€“ 441122	+91 9545648496	danaogreentech@gmail.com	
10	Green Loop	Dr Rimika Kapoor	Founder	UG-17 District centre, Janakpuri, New Colony	9811030022		
11	Innodust Marketing Pvt Ltd	Sunil Kumar Sahoo	Director	Plot no-a/63/1 Saheed Nagar, Bhubneshwar, ODISHA-751007	8260727978	Innodust.marketing@gmail.com	
12	Koshish Sustainable Solution Pvt Ltd	Dr Ratnesh Tiwari	Director	6Th floor, Tradex Tower, 15A, Sector-125, Noida, UP-201303	9990562620	Ratnesh.tiwari@koshishindia.in	
13	Young India Power Solution	Ratnakar Tripathi	Director	1038, Jankipuram garden, Lucknow, U.P-226021	9838520564		
14	Nimar Solar	Satyendra Singh Chouhan	Director	305, KB Mall, Sapna Sangeeta Road, Indore (M.P.)-452001	7000834564	info.nimarsolar@gmail.com	

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Annexure 4: Training & Employment Details

Training and Employment Projections:

Year	Total Candidates		Women		People with Disability	
	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities	Estimated Training #	Estimated Employment Opportunities
2025-26	200	50	40	10	10	2
2026-27	200	50	40	10	10	2
2027-28	100	20	10	2	5	1

Training, Assessment, Certification, and Placement Data for previous versions of qualifications:

Centre	Qualification Version	Year	Total Candidates				Women				People with Disability			
			Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed	Trained	Assessed	Certified	Placed
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-
-			-	-	-	-	-	-	-	-	-	-	-	-

Applicable for revised qualifications only, data to be provided year-wise for the past 3 years.

List Schemes in which the previous version of Qualification was implemented: *Not Applicable*

Content availability for previous versions of qualifications:

☒ Participant Handbook ☐ Facilitator Guide ☐ Digital Content ☐ Qualification Handbook ☐ Any Other:

Languages in which Content is available: English

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Annexure 5: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools:

Refer NCVET "Guidelines for Blended Learning for Vocational Education, Training & Skilling" available on:
https://ncvet.gov.in/sites/default/files/Guidelines%20for%20Blended%20Learning%20for%20Vocational%20Education,%20Training%20&%20Skilling.pdf

S. No.	Select the Components of the Qualification	List Recommended Tools – for all Selected Components	Offline : Online Ratio
1	☒Theory/ Lectures - Imparting theoretical and conceptual knowledge		
2	☒Imparting Soft Skills, Life Skills, and Employability Skills /Mentorship to Learners		
3	☒Showing Practical Demonstrations to the learners		
4	☒Imparting Practical Hands-on Skills/ Lab Work/ workshop/ shop floor training		
5	☒Tutorials/ Assignments/ Drill/ Practice		
6	☒Proctored Monitoring/ Assessment/ Evaluation/ Examinations		
7	☒On the Job Training (OJT)/ Project Work Internship/ Apprenticeship Training		

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Annexure 6: Detailed Assessment Criteria

Detailed assessment criteria for each NOS/Module are as follows:

NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory	Practical	Project	Viva
SGJ/N6901: Introduce Soil Composition, Quality, and Health Implications	*Introduction to Soil, Pollution, Quality and relation to human.*	**64**	**36**	**-**	**-**
	PC1. Describe the structure and composition of the Earth's lithosphere.	2	-	-	-
	PC2. Explain the processes involved in forming and transforming rocks and minerals	1			
	PC3. Identify different types of rocks and their properties.	2	-	-	-
	PC4. Describe the factors influencing soil formation (parent material, climate, organisms, topography, time).	8	-	-	-
	PC5. Explain the processes of soil development (weathering, leaching, accumulation, etc.).	1			
	PC6. Identify various sources of soil pollution (industrial, agricultural, urban) and recognize different types of pollutants (heavy metals, pesticides, organic contaminants).	2	-	-	-
	PC7. Understand the adverse effects of soil pollution on soil health, ecosystem function, food safety, and human health.	4	-	-	-
	PC8. Describe the processes governing the movement and transformation of pollutants in soil, including adsorption, leaching, and biodegradation.	2	-	-	-

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PC9. Identify different soil types and their characteristics.	4	-	-	-
PC10. Identify different types of soil pollutants (heavy metals, organic contaminants, pesticides, etc.) and their sources.	6	-	-	-
PC11. Describe the key components of an ecological risk assessment (problem formulation, exposure assessment, effects assessment, risk characterization).	1	-	-	-
PC12. Evaluate the potential adverse effects of soil pollution on living organisms.	4	-	-	-
PC13. Characterize the ecological risks and develop risk management strategies.	5	-	-	-
PC14. Define soil quality and identify key physical, chemical, and biological indicators used to assess soil health and function.	2	-	-	-
PC15. Understand the causes and consequences of soil degradation, including erosion, compaction, nutrient depletion, and salinization.	3	-	-	-
PC16. Learn methods for monitoring soil quality, interpreting data, and making informed management decisions.	2	-	-	-
PC17. Identify common sources of soil contamination (industrial, agricultural, waste disposal) and recognize different types of contaminants (heavy metals, pesticides, organic pollutants).	4	-	-	-
PC18. Understand how contaminants move through the environment and enter the human body via inhalation, ingestion, and dermal contact.	2	-	-	-
PC19. Explore the acute and chronic health effects associated with exposure to various soil contaminants.	4	-	-	-

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PC20. Learn about methods for assessing and managing risks posed by soil contamination to human health.	5		-	-
PC21. Learn proper techniques for soil identification.	-	8	-	-
PC22. Identify different soil types in the field based on their physical characteristics.	-	2	-	-
PC23. Interpret soil type results and relate them to soil quality and contamination.	-	6	-	-
PC24. Learn about techniques for soil erosion control, nutrient management, and soil health improvement.	-	3	-	-
PC25. Compute risk assessment indices to evaluate the ecological risks associated with soil pollution of different natures.	-	4	-	-
PC26. Identify management strategies to mitigate the identified risks.	-	8	-	-
PC27. Interpret soil test results and evaluate soil quality using various assessment tools and indices.	-	4	-	-
PC28. Determine potential health risks to human populations under exposure to different soil contaminants.	-	1	-	-

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NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory	Practical	Project	Viva
SGJ/N6902: Assess and Classify Soil Properties	Soil Properties	**45**	**55**	**-**	**-**
	PC1. Understand the concept of soil texture, its classification based on particle size distribution (sand, silt, clay), and its influence on other soil properties and functions.	4	-	-	-
	PC2. Learn about soil structure, the formation and types of soil aggregates, their role in soil porosity, water infiltration, and root growth.	7	-	-	-
	PC3. Grasp the concept of soil water holding capacity, factors affecting it (texture, structure, organic matter), and its importance for plant growth and water management.	2	-	-	-
	PC4. Explore additional physical properties such as soil bulk density, particle density, porosity, soil temperature, and colour, and their implications for soil management and plant growth.	5	-	-	-
	PC5. Understand the role of macro (N, P, K, Ca, Mg, S) & micronutrients (Fe, Mn, Zn, Cu, B, Mo, Cl) in plant growth and soil health.	3	-	-	-

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PC6. Learn about the composition, decomposition, and functions of soil organic matter and its significance as a carbon sink.	2	-	-	-
PC7. Grasp the concepts of soil pH, salinity, and electrical conductivity and their influence on nutrient availability, plant growth, and soil health.	2	-	-	-
PC8. Identify common heavy metals and toxic ions in soil, their sources, and their potential adverse effects on ecosystems and human health.	7	-	-	-
PC9. Understand the diversity of soil organisms (bacteria, fungi, etc.) and their crucial roles in nutrient cycling, decomposition, and soil structure formation.	7	-	-	-
PC10. Learn about the types and functions of soil enzymes (oxidoreductases, hydrolases, transferases, etc.) and their significance as indicators of soil biological activity and health.	2	-	-	-
PC11. Metagenomics and Metatranscriptomics: Understand the principles and applications of metagenomics and metatranscriptomics data in studying soil microbial communities and their functional potential.	4	-	-	-
PC12. Conduct laboratory tests (e.g., hydrometer method, feel method) to determine soil texture and classify soil samples.		2	-	-
PC13. Assess soil aggregate stability using wet sieving or other methods and relate it to soil structure and management practices.		5	-	-

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PC14. Determine soil water holding capacity using field or laboratory methods and interpret the results for irrigation and drainage planning		8	-	-
PC15. Measure soil bulk density and calculate porosity to evaluate soil compaction and its impact on root growth and water movement.		3	-	-
PC16. Conduct laboratory tests to determine levels of macro and micronutrients in soil samples.		7	-	-
PC17. Analyze soil organic carbon and estimate soil organic matter content using standard methods.		7	-	-
PC18. Measure soil pH, salinity, and electrical conductivity using appropriate instruments and techniques.		8	-	-
PC19. Employ analytical techniques (e.g., Inductively coupled plasma) to detect and quantify heavy metals and toxic ions using Ion chromatography in soil.		4	-	-
PC20. Conduct laboratory assays to measure the activity of key soil enzymes, such as dehydrogenase, urease, and phosphatase.		6	-	-
PC21. Analyze soil DNA and RNA sequences to identify microbial communities and their functional genes and transcripts.		5	-	-

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NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory	Practical	Project	Viva
SGJ/N6903: Identify techniques for Soil Sampling and Ensuring Quality Standards	*Soil Sampling, Procedure and Quality Assessment*	**58**	**42**	**-**	**-**
	PC1. Learn about different soil sampling methods (e.g., auger sampling, core sampling, grab sampling, composite sampling) and their suitability for different soil types for specific purposes.	8	-	-	-
	PC2. Grasp the concept of grid-based sampling, its advantages in ensuring representative sampling, and its application in spatial data analysis along with Grid-based Study and Geo-tagging	10	-	-	-
	PC3. Learn proper techniques for handling, labelling, and preserving soil samples to maintain their integrity and prevent any contamination.	10	-	-	-
	PC4. Understand the diversity and functions of soil microbial communities and their role in maintaining soil health and ecosystem services.	10	-	-	-
	PC5. Identify key microbial and chemical markers (e.g., microbial biomass, enzyme activities, community structure, nutrients, etc) that can be used to assess soil quality and function.	10			
	PC6. Explore how microbial communities respond to various stressors (e.g., pollution, land-use change, climate change) and their implications for soil health assessment.	10	-	-	-

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	PC7. Conduct hands-on soil sampling using various techniques in different field conditions.	-	8		
	PC8. Design and implement a grid-based sampling plan for a specific area, considering factors like variability, objectives, and resources.	-	9		
	PC9. Prepare soil samples for laboratory analysis and interpret the results in relation to sampling objectives.	-	7		
	PC10. Microbial Biomass and Activity Measurements: Conduct laboratory assays to determine microbial biomass and activity in soil samples.	-	10		
	PC11. Molecular Analysis of Soil Microbial Communities: Extract DNA from soil samples and perform basic molecular techniques (e.g., PCR, gel electrophoresis, RAPD, Biolog, etc.) for microbial community analysis.	-	8		

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NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory	Practical	Project	Viva
SGJ/N6904: Apply Statistical and GIS Tools in Soil Analysis	*Soil Analysis and significance of Statistical and RS-GIS Tools*	**60**	**40**	**-**	**-**
	PC1. Understand and apply measures of central tendency (mean, median, mode), dispersion (range, variance, standard deviation), and distribution to summarize and describe soil data.	10	-	-	-
	PC2. Learn about hypothesis testing, confidence intervals, and statistical significance to draw inferences and make generalizations from soil data.	10			
	PC3. Explore the relationships between different soil variables using correlation and regression analysis, and interpret the results to understand their interdependence.	20			
	PC4. Introduce geospatial concepts based on RS-GIS tools for analyzing and mapping geo-referenced soil data.	20			
	PC5. Perform descriptive and inferential statistical analyses using SPSS or Excel, including t-tests, ANOVA, and regression analysis.	-	10	-	-
	PC6. Employ Q-GIS or similar software to create maps, visualize spatial patterns, and perform geostatistical analysis on soil data.	-	10	-	-

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	PC7. Use XLSTAT or other tools to create informative charts, graphs, and maps to present soil data and analysis results effectively.	-	10	-	-
	PC8. Using Q-GIS to view raster and vector data.	-	10	-	-

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NOS/Module Name	Assessment Criteria for Performance Criteria/Learning Outcomes	Theory	Practical	Project	Viva
SGJ/N6905: Prepare Strategies for Soil Pollution Mitigation and Adoption of Advanced Technologies	*Soil Pollution: Mitigation and Technologies*	**60**	**40**	**-**	**-**
	PC1. Understand the principles and mechanisms of bioremediation, including the use of microorganisms and plants to degrade or remove pollutants from soil.	10	-	-	-
	PC2. Explore the use of plants for the remediation of contaminated soil, including phytoextraction, phytostabilization, phytodegradation, and rhizofiltration.	10	-	-	-
	PC3. Learn about the use of salt-tolerant plants and microorganisms to improve soil quality and productivity in saline environments.	10	-	-	-
	PC4. Understand the role of microorganisms in bioremediation and the factors influencing their effectiveness in degrading various pollutants.	20	-	-	-
	PC5. Understand the concept and types of IPR, including patents, trademarks, copyrights, and trade secrets, and their importance in protecting innovations and promoting economic growth.	10	-	-	-
	PC6. To visit field experiments to evaluate the effectiveness of bioremediation techniques for degrading specific pollutants in soil.	-	10	-	-

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	PC7. To assess and evaluate the indicators (Bioconcentration factor and Translocation factor) for effective Phytoremediation strategies.	-	10	-	-
	PC8. Patent Search and Analysis: Conduct patent searches using online databases and analyze patent documents to assess the novelty and patentability of inventions.	-	10	-	-
	PC9. Case Studies and Simulations: Analyze real-world case studies involving IPR disputes and participate in simulations to develop negotiation and decision-making skills.	-	10	-	-

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Annexure 7: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

1. Assessment System Overview:
   - Batches assigned to the assessment agencies for conducting the assessment on SDSM/SID or email
   - Assessment agencies send the assessment confirmation to VTP/TC looping SCGJ
   - Assessment agency deploys the ToA certified Assessor for executing the assessment
   - SCGJ monitors the assessment process & records

2. Testing Environment:
   - Confirm that the centre is available at the same address as mentioned on SDMS or SID
   - Check the duration of the training.
   - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
   - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
   - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
   - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
   - Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:
   - Question papers created by the Subject Matter Experts (SME)
   - Question papers created by the SME verified by the other subject Matter Experts
   - Questions are mapped with NOS and PC
   - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
   - Assessor must be ToA certified & trainer must be ToT Certified
   - Assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:
   - Time-stamped & geotagged reporting of the assessor from assessment location
   - Center photographs with signboards and scheme specific branding
   - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
   - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:
   - Surprise visit to the assessment location

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- Random audit of the batch
- Random audit of any candidate

6. Method for assessment documentation, archiving, and access
   - Hard copies of the documents are stored
   - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
   - Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

On the Job:

OJT Monitoring Report

- As in Green Jobs Sector, reproducing the evidence for assessment is not feasible due to constraints like cost, confidentiality and controlled environment, every
- Apprentice is required to record the evidences performed during the OJT and the same gets authorized by his/her supervisor.
- The evidence recording is done in a structured monitoring report, termed as OJT Monitoring report.
- During the OJT, every trainee is required to fill the OJT monitoring report which is required to be signed by his/her supervisor.
- Towards the end of OJT period these reports are submitted with the HR department of company
- These duly submitted reports are then verified by an Industry nominated assessor for verification of evidence.

Theory, Practical & Viva:

- Scope – Is used to test the knowledge and understanding and skills acquired during the OJT as well as to conform the OJT monitoring report.
- Some personality traits and generic skills (such as – promptness, sharpness, communication skills, depth of knowledge, comprehension, presentation, patience
- etc) can also be tested, which is also required for the QP.
- Tools – The assessment's questions should be aligned with the Qualification Pack, covering the PCs. There will be summative assessment at the end of the OJT.
- Method – Direct questions open and close ended questions, situation-based questions, analytical questions, and decision-making based questions for Viva,
- MCQ for the theory and performing QP related operations for practical. Different questions in theory, practical and viva are included to test relevant PCs from
- the QP
- Analysis – Assessor draws a spectrum of ready answers to be expected from trainee for Viva. This reduces effect of subjectivity of the assessor. Comparative
- Quality of trainees within a batch or different institutes can be gauged. The skill is gauged by observing the practical work.

Execution of OJT Assessment:

- HR department hands over the individual OJT monitoring report with Industry nominated assessor and schedules an assessment meeting for each trainee.

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- Industry nominated assessor assesses each trainee based on OJT monitoring report, viva on each PC and also takes into account attendance of each trainee towards the end of the OJT period.
- The OJT marks are compiled for each NOS by the Industry nominated assessor and submitted with HR department of company.
- The OJT assessment results are then sent to SCGJ by HR department of company in a sealed envelope for compiling the assessment results in case of offline assessment.

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Annexure 8: Acronym and Glossary

Acronym

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework
OJT	On the Job Training

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above. https://ncvet.gov.in/sites/default/files/NCVET.pdf

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Annexure 9: Career Progression and OM

