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GOVERNMENT NOTICES

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

No. 422 **6 May *2005***

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with regulation 24(c) of the Standard Generating Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

ENVIRONMENTAL SCIENCE, ENVIRONMENTAL MANAGEMENT AND WASTE MANAGEMENT

publishes the following qualifications and unit standards for public comment.

This notice contains the titles, fields, sub-fields, **NQF** levels, credits, and purpose of the qualifications and unit standards. The qualifications and unit standards can be accessed via the SAQA web-site at **www.saqa.org.za**. Copies may also be obtained from the Directorate of Standards Setting and Development at the **SAQA** offices, Hatfield Forum West, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the qualification and unit standards should reach **SAQA** at the address ***below and no later than 6 June 2005.*** All correspondence should be marked **Standards** Setting – SGB ENVIRONMENTAL SCIENCE, ENVIRONMENTAL MANAGEMENT AND WASTE MANAGEMENT and addressed to

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ACTING DIRECTOR: STANDARDS SETTING AND DEVELOPMENT

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

National certificate: Environmental Practice

SAQA QUAL ID	*QUALIFICATION TITLE*		
49605	National Certificate: Environmental Practice		
SGB NAME		*NSB 10*	*PROVIDER NAME*
SGB Environmental Sc/ Mgt & Waste Mgt		Physical, Mathematical, Computer and Life Sciences	
QUAL TYPE		*FIELD*	*SUBFIELD*
National Certificate		Physical, Mathematical, Computer and Life Sciences	Environmental Sciences
ABET BAND	*MINIMUM CREDITS*	*NQF LEVEL*	*QUALIFICATION CLASS*
Undefined	128	Level 2	Regular-Unit Stds Based

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose:

This qualification is the second in a learning pathway for practitioners in the field of environmental science, environmental management and waste management. This series of qualifications will equip practitioners with the skills, knowledge and values to contribute towards the wise and effective use and management of our built environment, natural resources and ecological systems.

The specific purpose of this qualification represents the skills, knowledge and values required by competent practitioners to:

> Operate and maintain machinery and equipment and use resources in an environmentally responsible manner

> Apply basic principles and tools of environmental practice to avoid, minimise or remedy negative environmental impacts

With this understanding, practitioners will be able to engage productively and responsibly in work, individual or community related activities in the field of environmental science, environmental management and waste management. This qualification will also serve as a basis for further learning, and will equip learners with the knowledge, skills and values to participate meaningfully in society and contribute towards developing sustainable communities.

This qualification is applicable to a range of contexts within the field of environmental science, environmental management and waste management, such as local government, public and private waste management enterprises, cultural or natural heritage sites, community projects, recycling and recovery of resources, control and eradication of invasive and alien species, rural development and site preparation or rehabilitation. It is also suitable for workers with environmental functions in a range of industries such as mining, chemicals or manufacturing. The following are typical contexts in which this qualification can be assessed:

> Waste management related activities, eg

> Materials recovery and buy-back centres

> Waste reception

> Landfill operations

> Water course cleaning, care and maintenance

> Care of public places, open areas, cultural and natural heritage sites

> Maintenance of parks and sports fields

> Community projects and job creation schemes relating to environmental practice
> General industrial, extraction, ie activities with an environmental care or improvement focus

Rationale for the qualification:

South Africa has a need to manage and protect its natural resources and ecological systems, while simultaneously using its resources in a sustainable manner to promote social, physical and economic development.

People as individuals, and as members of social or workplace communities, need to become aware of their responsibilities towards the environment and to be empowered to make informed choices regarding their own activities and the impact that these activities have on the environment. There is also a need for people to develop practices which will ensure that their activities, individually and collectively, result in the sustainable use of resources and minimal negative impact on the environment.

Recent developments in environmental legislation have resulted in an increased demand for practitioners with the necessary skills, knowledge and values to fulfil these legislative requirements.
Such practitioners - as learners, as workers and as members of social communities - need to be equipped to engage with the complexities and challenges which arise from this need to ensure that use of resources and development is socially, ecologically and economically sustainable.

This qualification will enable providers, assessors and learners to plan, implement and measure the outcomes of suitable learning programmes, or to recognize prior learning. It will recognise the skills, knowledge and values of learners who engage actively in activities relevant to the field of environmental science, environmental management and waste management. Such activities are necessary in order to develop a portfolio of evidence.
The qualification is suitable for learners who:
> Have attended courses and then apply the knowledge gained to activities in a workplace or in a community, or
> Are already workers and have acquired the skills and knowledge without attending formal courses, or
> Are already active in the community and have acquired the skills and knowledge without attending formal courses, or
> Participate in skills programmes and appropriate work experience or community work, or
> Are part of a learnership programme which integrates structured learning and work experience, or
> Acquire their learning through any combination of the above.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED TO BE IN PLACE

It is assumed that the learner is competent in Communication and Mathematical literacy at NQF level 1.

Recognition of prior learning:

This qualification may be obtained through the process of RPL. The learner should be thoroughly briefed prior to the assessment and support should be provided to assist the learner in the process of developing a portfolio. While this is primarily a context-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the Exit Level Outcomes.

QUALIFICATION RULES

All the Fundamental credits (39) plus the (77) core credits are compulsory. A total of (12) electives should be selected to make up the total of 128 for the qualification.

EXIT LEVEL OUTCOMES

The Exit Level Outcomes for this qualification reflect a combination of Specific Outcomes and Critical Cross-Field Education and Training Outcomes. The way in which the Critical Cross-Field Outcomes have been advanced through the learning required for this qualification is embedded in the way in which the unit standards have been constructed. Critical Cross-Field Outcomes form the basis for acquiring skills, knowledge and values. The application of these in a specific context results in the achievement of Specific

Outcomes. The integration of Specific Outcomes from a variety of unit standards results in the ability to achieve the Exit Level Outcomes.

1. Use simple, work-related machines and equipment in an environmentally efficient and effective manner
Range: Simple, work-related machines and equipment include hand tools and mechanical machines, eg pneumatic compaction equipment, chain saws, bush cutters, static compaction equipment, weighing equipment, pumps, mixing equipment, shredding equipment, lifts, hoists, loaders, transport vehicles (inspection and basic maintenance only.

2. Participate as a member of a team or group to achieve work and environmental objectives.
Range: Group includes members of the public where applicable:
Environmental objectives includes reducing waste or energy consumption, carrying out repair and maintenance activities to remedy environmental impacts, etc.

3. Gather, compare and report data relating to environmental impacts.
Range: Data includes time periods, location, conditions before and after change, etc.

4. Use basic environmental tools in practical activities to prevent, correct or remedy'environment impacts.
Range: Practical activities include broader activities such as rehabilitation projects and public participation. Using tools includes assess impact and evaluating the effect of interventions. Tools are appropriate to the level of qualification, eg risk assessment, environmental checklists, audit sheets, compliance sheets.

ASSOCIATED ASSESSMENT CRITERIA

1.
7 Materials and resources are handled and used in an environmentally responsible manner.
Range: Examples of materials and resources include: chemicals, sewage, sludge, hazardous materials; energy, air, water, soil, minerals, plants, animals.
Environmentally responsible: an awareness of conservation of resources, prevention and control of pollution, maintenance of health and safety.

> The process is monitored and adjustments are made to meet operational standards.
Range: Examples of the process include: loading, handling, compacting; lifting and moving; shredding; clearing or cleaning; taking, checking and testing of samples; monitoring and checking emissions, flow and quality of materials, energy usage, noise, leaks, smoke, effluents; mixing and preparing ingredients and chemicals; taking stock; digging holes or trenches.

> Machinery and equipment are checked, maintained and operated responsibly.
Range: Operating includes preparing for use and monitoring equipment where appropriate.

> Procedures are applied appropriately and accurately.
Range: Includes procedures for routine and non-routine activities.

> Products are produced or services delivered that meet operational requirements and standards.
Range: Product means any results of an action or process, eg compacted or shredded materials. Services include any work done to correct or remedy environmental impacts, eg clearing invasive plants, cleaning or rehabilitating affected areas.

2.
> Contribution is made to the achievement of the objectives, including meeting deadlines.
> Relevant information is reported and conveyed accurately.
> Assistance and support is given to other team or group members.
> Contribution is made to the general maintenance and the housekeeping of the facility.

3.
> Field tests and data collection techniques are performed according to applicable criteria.
Range: Field tests relate to on-site testing using simple equipment and procedures.

> Applicable records and reports are completed and maintained.
Range: Applicable includes safety, health and environmental records

Maintained includes updated, handed on, filed, stored correctly.

> Appropriate actions are taken in response to the data.

> The need for and the significance of the data is explained.

4.
> A tool is used correctly to assess potential or actual environmental impact.
Range: Includes knowledge of human interactions with operational processes that have the potential to create environmental impacts.

> A plan to prevent, correct or remedy impacts is developed and implemented appropriately.
Range: Plans are within the scope and responsibility of the learner's context.

> The results of the intervention are evaluated.

Integrated Assessment:

In order to achieve the aims of integrated assessment it is recommended that the assessor assesses all components of the learning that credits are awarded for the unit standards during this assessment. It is recommended that learning components (ie fundamental and core) are combined into assignments and projects which are then included in the portfolio of evidence. This will form the basis for the bulk of the assessment. The assessor can then focus on specific areas for further probing and verification.

The assessment process should:
> Cover the explicit activities required for the qualification as well as the understanding of the concepts and principles which underpin the activities
> Establish how the Critical Cross-Field Outcomes have been advanced by the learning process.

The integrated assessment must be based on a summative assessment guide. The guide will spell out how the assessor will assess different aspects of the performance and will include:
> Looking at records and reports in the portfolio and reviewing previous assessments
> Asking questions and initiating short discussions to test understanding
> Observing the learner at work (in the primary activity as well as in other interactions).

The learner may choose in which language s/he wants to be assessed. This should be established as part of a process of preparing the learner for assessment and familiarising the learner with the approach being taken.

While this is primarily a context-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes.

Assessors should also evaluate evidence that the learner has been performing consistently to standard over a period of time.

INTERNATIONAL COMPARABILITY

Qualifications which are directly comparable with this one in level and scope have not been identified. The fact that this is a generic qualification that must serve the diverse needs of the broad field of environmental science, environmental management and waste management, puts it in a class of its own. Internationally, qualifications related to environmental science and environmental management fall into the sphere of higher education, apart from a few isolated examples at supervisory and first-tier management level. There are a limited number of qualifications which focus on waste management, such as the Scottish Vocational Qualifications and the National Vocational Qualifications of England, Wales and Northern Ireland. The approach taken in these qualifications aligns broadly with the approach taken here: qualifications are standards-based, learning is workplace-based, assessment is observation- and portfolio-based, and skills and knowledge are acquired, practiced and assessed within contexts relevant to the learner. However, this (ie the South African) qualification places a greater requirement on the learner to demonstrate successful integration of the knowledge and skills acquired. Another recent development has been the initiative by the International Solid Waste Association to develop qualifications and promote training internationally.

Developments are also taking place in other parts of the world, notably South America. However, concrete information of the type needed to carry out a detailed comparison could not be found within the limits of the research capability.

ARTICULATION OPTIONS

This qualification articulates with the National Certificate in Environmental Practice: NQF 3.

This qualification has been designed and structured so that qualifying learners can move from one context to another. Employers or institutions should be able to evaluate the outcomes of this qualification against the needs of their context and structure top-up learning appropriately. Equally, holders of other qualifications may be evaluated against this qualification for the purpose of **RPL.**

MODERATION OPTIONS

Moderators for the qualification should be registered as assessors with the relevant ETQA or an ETQA that has a mou with the relevant ETQA.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

The following criteria should be applied by the relevant ETQA:
> A qualification in a relevant field of environmental science, environmental management and waste management at NQF Level 3
> Any other criteria required by a relevant ETQA.

NOTES

N/A

UNIT STANDARDS
(Note: A blank space after this line means that the qualification is not based on Unit Standards.)

	UNIT STANDARD ID AND TITLE	LEVEL	CREDITS	STATUS
(core	12036 Orientate self in the workplace	Level 2	6	Registered
Core	12461 Communicate at work	Level 2	5	Registered
Core	12483 Perform basic first aid	Level 2	4	Reregistered
Core	13217 Collect and use information	Level 2	5	Registered
Core	13220 Keep the work area safe and productive	Level 2	8	Registered
Core	116080 Monitor, collect and collate agricultural data	Level 2	2	Registered
Core	119553 Take action to address impacts on the environment	Level 2	10	Draft - Prep for P Comment
Core	119554 Apply environmental management tools to assess impacts	Level 2	5	Draft - Prep for P
Core				
Core	and the environment			Comment
Elective	8330 Combat problem plants	Level 2	3	Reregistered
Elective	8332 Perform conservation guardianship	Level 2	8	Reregistered
Elective	8346 Manage cultural heritage resources in the field	Level 2	2	Reregistered
Elective	8348 Understand Nature Conservation issues	Level 2	4	Reregistered
Elective	10718 Use a personal budget to manage own money	Level 2	3	Registered
Elective	11818 Investigate work opportunities in order to make a personal career/employment decision	Level 2	2	Registered
Elective	12033 Demonstrate knowledge of water cycle, water and wastewater systems and processes	Level 2	5	Registered
Elective	12334 Conduct water process laboratory tests	Level 2	6	Registered

Elective	12351 Demonstrate An Ability To Work With Local Communities	Level 2	7	Registered
Elective	12352 Demonstrate knowledge of the roles and responsibilities of a community committee	Level 2	4	Registered
Elective	12465 Develop a learning plan and a portfolio for assessment	Level 2	6	Registered
Elective	12484 Perform bask fire fighting	Level 2	4	Reregistered
Elective	13202 Apply study and learning techniques	Level 2	3	Registered
Elective	13679 Control and extinguish a fire in a conservation area	Level 2	3	Reregistered
Elective	14051 Collect and record data	Level 2	3	Registered
Elective	14784 Apply sampling theory and practice in the chemical industry	Level 2	5	Registered
Elective	113818 Clean and maintain area of responsibility	Level 2	8	Registered
Elective	116064 Recognise and identify the basic functions of the ecological environment	Level 2	4	Registered
Elective	116077 Monitor water quality	Level 2	3	Registered
Elective	116121 Apply sustainable farming practices to conserve the ecological environment	Level 2	5	Registered
Elective	119555 Separate, handle, store, treat and transport waste	Level 2	9	Draft - Prep for P Comment
	dimensional shapes in different contexts			
Fundamental	9009 Apply basic knowledge of statistics and probability to influence the use of data and procedures in order to investigate life related problem	Level 2	3	Reregistered
Fundamental	12463 Understand and deal with HIV/AIDS	Level 2	3	Registered

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UNIT STANDARD: 1

Apply environmental management tools to assess impacts

SAQA US ID	*UNIT STANDARD TITLE*
119554	Apply environmental management tools to assess impacts

SGB NAME		*NSB 10*	*PROVIDER NAME*
SGB Environmental Sc/ Mgt & Waste Mgt		Physical, Mathematical, Computer and Life Sciences	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical, Mathematical, Computer and Life Sciences	Environmental Sciences
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	*5*	Level 2	Regular

SPECIFIC OUTCOME 1

Identify a variety of potential and actual impacts on the environment and use the correct terminology to describe them.

SPECIFIC OUTCOME 2

Explain the reasons for using particular assessment tool(s).

SPECIFIC OUTCOME 3

Use environmental management tools ***to*** assess the impacts.

SPECIFIC OUTCOME 4

Record and maintain data and identify anomalies.

SPECIFIC OUTCOME 5

Determine the immediate causes of the identified impacts.

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UNIT STANDARD: 2

SAQA US ID	***UNIT STANDARD TITLE***		
1**19553**	Take action to address impacts on the environment		
SGB NAME		***NSB 10***	***PROVIDER NAME***
SGB Environmental Sc/ Mgt & Waste Mgt		Physical, Mathematical, Computer and Life Sciences	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Physical, Mathematical, Computer and Life Sciences	Environmental Sciences
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	10	Level 2	Regular

SPECIFIC OUTCOME 1

Determine an appropriate response to a variety of identified environmental impacts.

SPECIFIC OUTCOME 2

Develop an appropriate plan to address each identified impact.

SPECIFIC OUTCOME 3

Implement the plans and evaluate the results.

SPECIFIC OUTCOME 4

Record and report interventions and results achieved.

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UNIT STANDARD: **3**

Use **tools** and operate equipment in an environmentally responsible manner

SAQA US ID	*UNIT STANDARD TITLE*		
119556	Use tools and operate equipment in an environmentally responsible manner		
SGB NAME		***NSB 10***	***PROVIDER NAME***
SGB Environmental Sc/ Mgt & Waste Mgt		Physical, Mathematical, Computer and Life Sciences	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Physical, Mathematical, Computer and Life Sciences	Environmental Sciences
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	10	Level ***2***	Regular

SPECIFIC OUTCOME 1

Select and use appropriate tools and equipment responsibly.

SPECIFIC OUTCOME 2

Inspect and prepare tools and equipment prior to use.

SPECIFIC OUTCOME 3

Maintain and store tools and equipment.

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UNIT STANDARD: **4**

SAQA US ID	***UNIT STANDARD TITLE***		
1***19558***	Work with, use and care for materials and resources which can impact on health and the environment		
SGB NAME		***NSB 10***	***PROVIDER NAME***
SGB Environmental Sc/ Mgt & Waste Mgt		Physical, Mathematical, Computer and Life Sciences	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Physical, Mathematical, Computer and Life Sciences	Environmental Sciences
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	10	Level 2	Regular

SPECIFIC OUTCOME 1

Classify materials and resources found in an environment according to their potential impact(s) on health and the environment.

SPECIFIC OUTCOME 2

Work with, use, transport, store and care for materials and resources.

SPECIFIC OUTCOME 3

Recognise and respond to environmentally damaging impacts resulting from the extraction, use, transport or storage of materials or resources.

SPECIFIC OUTCOME 4

Compile required records related to handling and using materials or resources and submit reports.

SPECIFIC OUTCOME 5

Collect, handle and dispose of waste.

SPECIFIC OUTCOME 6

Conserve materials and resources and use them wisely.

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UNIT STANDARD: **5**

Operate waste disposal facilities

SAQA US ID	***UNIT STANDARD TITLE***
119557	Operate waste disposal facilities

SGB NAME	***NSB 10***	***PROVIDER NAME***
SGB Environmental Sc/ Mgt & Waste Mgt	Physical, Mathematical, Computer and Life Sciences	
UNIT STANDARD TYPE	***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular	Physical, Mathematical, Computer and Life Sciences	Environmental Sciences

ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	***6***	Level 2	Regular

SPECIFIC OUTCOME 1

Apply the appropriate disposal method for each category of waste.

SPECIFIC OUTCOME 2

Control and direct movement of vehicles on the waste disposal site.

SPECIFIC OUTCOME 3

Control access and monitor the flow of incoming materials to a waste facility.

SPECIFIC OUTCOME 4

Recognise and report threats or damage to health, safety or the environment.

SPECIFIC OUTCOME 5

Compile records related to waste disposal.

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UNIT STANDARD: ***6***

SAQA US ID	***UNIT STANDARD TITLE***		
1**19555**	Separate, handle, store, treat and transport waste		
SGB NAME		***NSB i 0***	***PROVIDER NAME***
SGB Environmental Sc/ Mgt & Waste Mgt		Physical, Mathematical, Computer and Life Sciences	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Physical, Mathematical, Computer and Life Sciences	Environmental Sciences
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	9	Level 2	Regular

SPECIFIC OUTCOME 1

Separate, treat and store waste.

SPECIFIC OUTCOME 2

Transport waste.

SPECIFIC OUTCOME 3

Control access and monitor the flow of incoming materials to a waste facility.

SPECIFIC OUTCOME 4

Recognise and report threats or damage to health, safety or the environment.

SPECIFIC OUTCOME 5

Compile relevant records.