



Australian Government

Department of Education, Employment and Workplace Relations

SFIAQUA213C Monitor stock and environmental conditions

Release: 1

SFIAQUA213C Monitor stock and environmental conditions

Modification History

Not Applicable

Unit Descriptor

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| <p>Unit descriptor</p> | <p>This unit of competency involves monitoring <i>cultured and held stock</i> behaviour and health, routine water quality and environmental parameters. It covers interpreting instructions, using basic monitoring equipment appropriately and recording and communicating results and observations to appropriate individuals. The majority of these readings would be taken in the field or in the culture or holding structure, although some may involve taking samples and preparing them for submission to an external laboratory for testing.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit. Therefore it will be necessary to check with the relevant state or territory regulators for current licensing, legislative or regulatory requirements before undertaking this unit.</p> |
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Application of the Unit

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| <p>Application of the unit</p> | <p>This unit has application to both closed and open stock culture systems.</p> <p>Licences may be required if operating:</p> <ul style="list-style-type: none"> • vehicles • vessels. <p>All enterprise or workplace procedures and activities are carried out according to <i>relevant government regulations, licensing and other compliance requirements</i>, including <i>occupational health and safety (OHS) guidelines</i> and <i>ecologically sustainable development (ESD) principles</i>.</p> <p>Equipment operation, maintenance, repairs and calibrations are undertaken in a safe manner that conforms to manufacturer instructions. Appropriate <i>personal protective equipment (PPE)</i> is selected, checked, used and maintained.</p> |
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

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| Prerequisite units | | |
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Employability Skills Information

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| Employability skills | This unit contains employability skills. |
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Elements and Performance Criteria Pre-Content

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| Elements describe the essential outcomes of a unit of competency. | Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide. |
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Elements and Performance Criteria

| ELEMENT | PERFORMANCE CRITERIA |
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| 1. Prepare for monitoring | <p>1.1. Monitoring schedule is confirmed with supervisor and tasks noted for determining stock behaviour, general health, routine water quality factors and environmental parameters.</p> <p>1.2. Required basic equipment is collected, calibrated and checked for serviceability.</p> <p>1.3. Basic repairs are made to sub-standard equipment.</p> <p>1.4. Equipment and data or record sheets are prepared for use at monitoring site.</p> |
| 2. Carry out monitoring | <p>2.1. Water quality tests are undertaken at sites according to monitoring schedule.</p> <p>2.2. Visual inspections of stock behaviour and other observations are undertaken.</p> <p>2.3. Sampling of stock to assess general health is undertaken.</p> <p>2.4. Water and/or stock samples are prepared according to laboratory specifications and submitted to laboratory for analysis.</p> |
| 3. Complete monitoring activities | <p>3.1. Work areas are cleaned, including checks, repairs and storage of equipment.</p> <p>3.2. Relevant monitoring observations or information is recorded legibly and accurately, and any out of range or unusual records are checked.</p> <p>3.3. Non-compliances are conveyed to senior personnel and recommendations for improvements made.</p> <p>3.4. Feedback on own work performance is sought from supervisor and opportunities to improve identified.</p> |

Required Skills and Knowledge

| REQUIRED SKILLS AND KNOWLEDGE |
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| This section describes the skills and knowledge required for this unit. |
| Required skills |
| <ul style="list-style-type: none"> • collecting samples of stock • collecting water and other environmental samples |

REQUIRED SKILLS AND KNOWLEDGE

- communicating ideas on possible improvements
- communicating with supervisor on monitoring activities
- operating, maintaining and calibrating basic monitoring equipment
- providing oral reports and written monitoring records on out of range and non-compliances to supervisor
- recognising normal and abnormal stock behaviour and environmental conditions.

Literacy skills used for:

- reading and interpreting monitoring schedules and enterprise procedures
- recording and reviewing water quality data or environmental condition reports
- recording monitoring information.

Numeracy skills used for:

- basic calculations used in measuring water quality and dilutions
- reading machines, meters or test kits.

Required knowledge

- basic monitoring equipment:
 - calibration and operating methods
 - maintenance and basic repairs
 - options and limitations
- basic sampling equipment:
 - maintenance and basic repairs
 - options and limitations
- basic water quality factors and their impact on stock health
- basic water quality tests to be undertaken
- effects of environmental parameters and weather conditions on stock and OHS of employees
- effects of farm wastes or effluent on environment
- normal and abnormal stock behaviour.

Evidence Guide

| EVIDENCE GUIDE | |
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| <p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p> | |
| Overview of assessment | |
| Critical aspects for assessment evidence required to demonstrate competence in this unit | <p>Assessment must confirm the ability to:</p> <ul style="list-style-type: none"> monitor stock behaviour and general health, basic water quality factors and environmental parameters for indications that they are outside of the acceptable range as determined by the enterprise. <p>Assessment must confirm knowledge of:</p> <ul style="list-style-type: none"> sampling and monitoring procedures relevant to the enterprise stock behaviour and general health and how it is affected by changes in water quality water quality factors and environmental parameters relevant to the aquaculture enterprise. |
| Context of and specific resources for assessment | <p>Assessment is to be conducted at the workplace while monitoring is undertaken, or in a simulated work environment. It is recommended that assessment is conducted over a series of monitoring sessions.</p> <p>Resources may include:</p> <ul style="list-style-type: none"> culture or holding structures with/in water containing stock exhibiting a range of quality parameters data sheets for recording information environmental parameter range for stock species and culture or holding structures monitoring and sampling equipment for culture or holding stock and water monitoring schedules range for water quality factors test kits. |
| Method of assessment | <p>The following assessment methods are suggested:</p> <ul style="list-style-type: none"> demonstration practical exercises |

| EVIDENCE GUIDE | |
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| | <ul style="list-style-type: none"> • project work • written or oral short-answer testing. |
| Guidance information for assessment | This unit may be assessed holistically with other units within a qualification. |

Range Statement

| RANGE STATEMENT | |
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| <p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p> | |
| <p><i>Cultured or held stock</i> may include:</p> | <ul style="list-style-type: none"> • adults, broodstock (ready to breed), seedstock or stockers, eggs and sperm, fertilised eggs, larvae, post-larvae, seed, spat, hatchlings, yearlings, juveniles, fry, fingerlings, yearlings, smolt, sporophytes, seedlings and tissue cultures • finfish, crustaceans, molluscs, aquatic reptiles, amphibians, polychaete and oligochaete worms, plankton, micro-algae, seaweed, aquatic plants, live rock, sponges and other aquatic invertebrates • for human consumption (seafood), stockers for other farms, stockers for conservation or recreational fishing, display or companion animals (ornamentals), and other products, including pearls, skins, shells, eggs, chemicals and pigments • wild caught, hatchery or nursery reared. |
| <p><i>Relevant government regulations, licensing and other compliance requirements</i> may include:</p> | <ul style="list-style-type: none"> • biosecurity, translocation and quarantine • environmental hazard identification, risk assessment and control • health and welfare of aquatic animals • safety at sea and pollution control • OHS hazard identification, risk assessment and control. |

| RANGE STATEMENT | |
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| <i>OHS guidelines</i> may include: | <ul style="list-style-type: none"> • appropriate workplace provision of first aid kits and fire extinguishers • codes of practice, regulations and/or guidance notes which may apply in a jurisdiction or industry sector • enterprise-specific OHS procedures, policies or standards • hazard and risk assessment of workplace, maintenance activities and control measures • induction or training of staff, contractors and visitors in relevant OHS procedures and/or requirements to allow them to carry out their duties in a safe manner • OHS training register • safe lifting, carrying and handling techniques, including manual handling, and the handling and storage of hazardous substances • safe systems and procedures for outdoor work, including protection from solar radiation, fall protection, confined space entry and the protection of people in the workplace • systems and procedures for the safe maintenance of property, machinery and equipment, including hydraulics and exposed moving parts • the appropriate use, maintenance and storage of PPE. |
| <i>ESD principles</i> may include: | <ul style="list-style-type: none"> • applying animal welfare ethics and procedures • control of effluents, chemical residues, contaminants, wastes and pollution • control of weeds, pests, predators and diseases, and stock health maintenance • improving energy efficiency • increasing use of renewable, recyclable and recoverable resources • minimising noise, dust, light or odour emissions • preventing live cultured or held organisms from escaping into environment • reducing emissions of greenhouse gases • reducing energy use • reducing use of non-renewable resources • undertaking environmental hazard |

| RANGE STATEMENT | |
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| | identification, risk assessment and control <ul style="list-style-type: none"> • undertaking facility quarantine, biosecurity and translocation of livestock and genetic material • using and recycling water, and maintaining water quality. |
| <i>PPE</i> may include: | <ul style="list-style-type: none"> • buoyancy vest or personal floatation device (PFD) • hard hat or protective head covering • non-slip and waterproof boots (gumboots) or other safety footwear • personal locator beacon or Emergency Position Indicating Radio Beacon (EPIRB) • protective outdoor clothing for tropical conditions • safety harness • sun protection (e.g. sun hat, sunscreen and sunglasses) • uniforms, overalls or protective clothing (e.g. mesh and waterproof aprons) • waterproof clothing (e.g. wet weather gear and waders). |
| <i>Monitoring schedule</i> may include: | <ul style="list-style-type: none"> • culture or holding structures and monitoring site • environmental and weather conditions • equipment required • general observations, such as state or activity of culture or holding equipment, and behaviour and health of stock • basic routine water quality factors • time of day, frequency and monitoring period. |
| <i>Stock behaviour</i> may include: | <ul style="list-style-type: none"> • aggressive or cannibalistic • colour changes • feeding • piping, darting, flashing or whirling movement • predator avoidance • reproduction or courtship • schooling or individuals • swimming (finfish), crawling (crustaceans or gastropods) or gaping (bivalves). |
| <i>General health</i> may include: | <ul style="list-style-type: none"> • general appearance (e.g. colour, appendages, external parasites, skin or shell damage) |

| RANGE STATEMENT | |
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| | <ul style="list-style-type: none"> • growth rates. |
| <p><i>Routine water quality factors</i> may include:</p> | <ul style="list-style-type: none"> • alkalinity • ammonia, total ammonia and nitrogen • dissolved oxygen • hardness and carbonate hardness • major organisms in surrounding environment • nitrate • nitrite • pH • salinity • temperature • tides, water flow and wave action • turbidity (e.g. secchi disc and transparency) • weather, rain and wind. |
| <p><i>Environmental parameters</i> may include:</p> | <ul style="list-style-type: none"> • activity of pests and predators • climatic conditions (e.g. rainfall, amount of cloud cover, and wind direction and speed) • contaminants • light: <ul style="list-style-type: none"> • conductivity • dissolved oxygen • pH • salinity • temperature • natural foods • tidal flow direction and speed • wave size and direction. |
| <p><i>Basic equipment</i> may include:</p> | <ul style="list-style-type: none"> • chemical test kits • electronic machines or meters to measure: <ul style="list-style-type: none"> • conductivity • dissolved oxygen • pH • salinity • temperature • litmus paper and pH test kit • measuring devices: <ul style="list-style-type: none"> • ruler • scales • volumetric |

| RANGE STATEMENT | |
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| | <ul style="list-style-type: none"> • refractometer, density stick and hydrometer • sample jars or buckets • sampling nets • secchi disc • thermometer • water collector. |
| <i>Calibrated</i> may include: | <ul style="list-style-type: none"> • adjustment of pH references or other settings for calibration and preparations of calibration solution for calibration of NO₂ meter. |
| <i>Basic repairs</i> may include: | <ul style="list-style-type: none"> • replacement of cables • replacement of probes. |
| <i>Data or record sheets or books</i> may include: | <ul style="list-style-type: none"> • basic parameters to be measured • date and time • general observations • monitoring schedule • person's name and signature. |
| <i>Monitoring site</i> may include: | <ul style="list-style-type: none"> • inlet or effluent water • on- or off-farm (samples taken for measurement in laboratory) • upstream/downstream of culture structure • within or external to culture structure. |

Unit Sector(s)

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| Unit sector | Aquaculture operations |
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Co-requisite units

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| Co-requisite units | |
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Competency field

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| Competency field | |
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