



Australian Government

RINHB325D Construct and complete single aquifer production bores

Release: 2

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Modification History

Release	Comment
1	This unit replaces RIINHB325A Construct and complete single aquifer production bores.
2	Performance Criteria numbering corrected. Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to construct and complete single aquifer production bores in Drilling.

This unit is appropriate for those working in operational roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of this unit

Unit Sector

Drilling

Elements and Performance Criteria

1. Plan and prepare for the construction of single aquifer production bores	<p>1.1 Access, interpret and apply single aquifer production bore construction documentation and ensure the work activity is compliant</p> <p>1.2 Obtain, read, interpret, clarify and confirm work requirements</p> <p>1.3 Identify and address potential risks, hazards and environmental issues and implement control measures</p>
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	<p>1.4 Select and wear personal protective equipment appropriate for work activities</p> <p>1.5 Discuss scope of work with client and give technical advice, cost structure, workmanship warranty, quantity and quality of materials, construction standards and methods to be used and gain general agreement on drilling plan</p> <p>1.6 Obtain or sight any licences or permits required under the relevant state/territory legislation or regulation</p> <p>1.7 Communicate and coordinate activities with others throughout the work activity</p> <p>1.8 Obtain and interpret emergency procedures, and be prepared for fire/accident/emergency</p> <p>1.9 Provide detailed strata logs, pump and development test results conducted during bore development and water and strata samples to the appropriate authorities</p> <p>1.10 Complete all requirements for bore completion reports, decommissioning or abandonment and send to regulatory authorities within the time specified on bore licence</p>
<p>2. Design production bores for single aquifer systems</p>	<p>2.1 Determine most appropriate construction methods from the reading and interpretation of all available documented information</p> <p>2.2 Design the bore to ensure the exclusion of unsuitable surface waters</p> <p>2.3 Select a bore site that will prevent contamination and minimise interference with other bores and adhere to occupational health and safety requirements</p> <p>2.4 Determine a drilling fluid program to suit the expected down hole conditions</p> <p>2.5 Select likely water entry mechanisms from the formation to the bore such as open hole, slotted casing, screens or gravel packs</p> <p>2.6 Calculate appropriate artificial gravel pack design parameters and recommended annular thickness requirements</p> <p>2.7 Plot and interpret formation sieve analysis results onto graphs</p> <p>2.8 Undertake calculations to determine appropriate screen/slot design parameters (i.e. diameter, length, aperture size)</p> <p>2.9 Select appropriate bore/surface casing type, size, strength and wall thickness for the anticipated ground water quality and pressure conditions and any construction requirements</p> <p>2.10 Ensure all necessary materials anticipated for the job are</p>

	available and on site prior to commencement of construction phase
3. Construct production bores in single aquifer systems	<p>3.1 Carry out any pre-start and start up procedures on plant or ancillary equipment</p> <p>3.2 Identify, select and apply rig operational controls</p> <p>3.3 Select, slot, assemble, and insert casing and screens suitable for the formations in which they are deployed</p> <p>3.4 Select, mix and place grout or otherwise seal surface casing to whatever depths necessary and with a minimum grout sheath thickness of 20mm to protect bore from surface or shallow subsurface waters that may be contaminated or polluted</p> <p>3.5 Use and maintain drilling fluids and additives within the manufacturer's recommendations and that are non-toxic and capable of being completely removed from the bore upon completion</p> <p>3.6 Maintain, test and record fluid properties such as viscosity, mid weight, filtration and sand content so that the potential capacity, efficiency and quality of the bore is not affected</p> <p>3.7 Maintain plumbness and alignment of the hole within the required limitations and perform plumbness tests where required</p> <p>3.8 Collect, store, record, label and transport formation and water samples for mechanical and/or chemical analysis</p> <p>3.9 Maintain all records accurately and legibly</p> <p>3.10 Accurately calculate hole, annular fill, gravel pack and mud pit volumes in cubic metres or litres</p> <p>3.11 Select appropriate gravel pack or stabilising gravel fill materials</p> <p>3.12 Place artificial or stabilising gravel fill if required in a manner that will ensure uniform distribution in the annular space without bridging, voids or segregation</p> <p>3.13 Comply with relevant workplace occupational health and safety requirements for both the drilling equipment and construction materials</p> <p>3.14 Maintain tool string inventories</p> <p>3.15 Identify and protect headworks of the bore</p> <p>3.16 Construct headworks to seal and cap the bore from surface water pollutants, environmental concerns (e.g. flooding), damage and vandalism</p> <p>3.17 Incorporate methods for measuring static and pumping</p>

	<p>water levels in headworks and for adequate sealing when not in use</p> <p>3.18 Remove drilled fluids from the bore to allow subsequent development</p> <p>3.19 Dispose of/neutralise wastewater or hazardous materials from site and complete restoration of the bore site and camp facilities</p> <p>3.20 Maintain tool strings and inventories</p>
4. Develop bore	<p>4.1 Use bore development techniques with care to prevent collapsing of casing or screens</p> <p>4.2 Use development techniques to improve hydraulic transmissivity around the bore</p> <p>4.3 Undertake development until a continuous, clean supply of water is obtained, in accordance with acceptable and practical limits set by site, contractual or regulatory requirements</p> <p>4.4 Measure/calculate and record standing and drawdown water levels</p> <p>4.5 Perform pump and development tests to estimate the sand content and sustainable yield of the bore</p>
5. Disinfect/decontaminate bore and drilling equipment	<p>5.1 Clean and disinfect/decontaminate drilling equipment and tools before working on new sites to comply with relevant standards or regulatory requirements</p> <p>5.2 Disinfect bores and installed equipment constructed for potable supplies using chlorine or proprietary chemical solution or steam</p> <p>5.3 Handle hazardous chemicals in accordance with safety data sheets (SDS)</p> <p>5.4 Remove and dispose of/ neutralise any disinfecting agents from the bore upon completion</p>
6. Carry out bore maintenance and rehabilitation	<p>6.1 Carry out and shutdown procedures and secure equipment Undertake a process of diagnosis to determine likely cause of bore deterioration</p> <p>6.2 Devise a program of rehabilitation to ensure that the bore is restored to a reasonable condition</p>

7. Decommission test/bore holes	<p>7.1 Determine suitable decommissioning procedures and select appropriate materials</p> <p>7.2 Carry out the decommissioning (abandonment) of test holes or bore holes in single aquifer systems</p> <p>7.3 Verify position/location of hole for future reference</p> <p>7.4 Dispose of drill and other fluids safely</p> <p>7.5 Carry out housekeeping requirements</p>
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Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIINHB325A Construct and complete single aquifer production bores

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272>