# NWPHYD002 Apply principles of open channel hydraulics

**Release: 1**

# NWPHYD002 Apply principles of open channel hydraulics

## Modification History

Release 1.  This is the first release of this unit of competency in the NWP National Water Training Package.

## Application

This unit involves the skills and knowledge required to apply principles of open channel hydraulics.

It includes using hydraulic principles, calculating theoretical flows, collecting, interpreting, verifying data and applying theoretical techniques to produce flow data essential to performance. It also includes applying relevant legislation, regulations, industry standards and workplace policies and procedures.

This unit applies to water operators involved in the monitoring of all elements of the water cycle and impacts on the environment.  Those undertaking this unit would work in small teams, autonomously or under supervision, while performing complex tasks in a broad range of contexts that could be unpredictable, including remote, confined spaces, near water and/or at heights.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

## Pre-requisite Unit

Not applicable.

## Competency Field

Hydrology

## Unit Sector

Not applicable.

## Elements and Performance Criteria

| ELEMENTS | PERFORMANCE CRITERIA |
|---|---|
| Elements describe the essential outcomes. | Performance criteria describe the performance needed to demonstrate achievement of the element. |
| **1   Select open channel** | **1.1**      Identify monitoring objectives of the site and hydraulic |

| | | | |
|---|---|---|---|
| | **hydraulic methodology** | | calculation requirements |
| | | **1.2** | Select methodology for open channel hydraulic calculations |
| | | **1.3** | Identify hydraulic principles used for verification of calculations |
| | | **1.4** | Select other methodologies to review initial calculations |
| **2** | **Collect and review data for flow calculations** | **2.1** | Measure and collect appropriate data to calculate theoretical flows based on methodology selected |
| | | **2.2** | Determine the hydraulic characteristics of a monitoring site |
| | | **2.3** | Measure and collect appropriate data to calculate flows theoretically |
| | | **2.4** | Estimate hydraulic coefficients based on observations |
| | | **2.5** | Prepare records in a format suitable for dissemination |
| | | **2.6** | Review data collected and subsequent calculations for inconsistencies against measured flows |
| **3** | **Select the appropriate control structure** | **3.1** | Select appropriate control structures based on characteristics of the open channel and its catchment |
| | | **3.2** | Identify and determine the method to calculate flow by using the appropriate formulae for the control structure |
| **4** | **Calculate flow in open channels** | **4.1** | Select and use the appropriate formulae for calculating flows in open channels based on the characteristics of the open channel and its catchment |
| | | **4.2** | Identify the limitations of the formulae |
| | | **4.3** | Identify factors that would cause variations in the results |
| | | **4.4** | Verify results by applying hydraulic principles and other methodologies |
| | | **4.5** | Determine the characteristics of open channel pipe flow |
| **5** | **Calculate flow from pressure measurements** | **5.1** | Determine flow-based calculations by using pressure instruments |
| | | **5.2** | Make adjustments for absolute pressure instruments to measure head in open channels |

| 5.3 | Make corrections in pressure measurements to allow for head measurement of salt water |

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

## Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

## Unit Mapping Information

This unit replaces and is equivalent to NWPHYD001 Apply principles of open channel hydraulics.

## Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037