

# Aquifer Protection Development Permit Area



## 3. Aquifer Protection (AP DPA)

### 1. PURPOSE

The Aquifer Protection Development Permit Area (AP DPA) is designated under Section 488(1)(a) of the Local Government Act for the protection of the natural environment, its ecosystems, features, and biological diversity.

The objectives of the Aquifer Protection DPA designation are:

- To protect Aquifer 560 from land use and development activities;
- To protect the integrity of the low-permeable Vashon Till Aquitard, which confines and maintains artesian pressure and protects the aquifer from surface activities;
- To provide an opportunity to further understand the hydrogeological conditions of the Aquifer 560 system.

The AP DPA policies and guidelines are intended to outline the requirements for protecting Aquifer 560 and the Aquitard from development within the Town. The AP DPA works in tandem with the Aquifer Protection Bylaw (Bylaw No. 1338, 2025), Subdivision and Development Servicing and Stormwater Management Bylaw (Bylaw No. 1175, 2016) and water-related policies. Proponents should inform themselves of these relevant bylaws and policies when applying for an AP development permit.

### 2. AREA

The Aquifer Protection Development Permit Area is shown on [Map C-3](#). There are three applicable areas in this DPA: Sub Areas 1, 2 and 3.

### 3. JUSTIFICATION

Groundwater is an important resource. Provincially mapped Aquifer 560 supplies nearly the entirety of the Town's potable water. Aquifer 560 is a confined sand and gravel aquifer that extends from beneath Gibsons Harbour to Upper Gibsons near the base of Mt. Elphinstone, under several watersheds that contribute to recharge, including Chaster, Charman, Gibsons, and Soames Creeks. Aquifer 560 is thought to have been deposited prior to the Vashon Glaciation which occurred between 19,000 and 16,000 years ago. The aquifer is capped by a low permeability layer of Vashon Till, which forms an aquitard (the Aquitard) over the aquifer. As the glaciers melted and retreated, sea level rose and deposited the Capilano sediments, which are composed of various layers of fine- and coarse-grained marine deposits. The coarser grained sediments are water-bearing within the Capilano unit and forms a shallow unconfined aquifer (Capilano Aquifer) within the Town of Gibsons. The Capilano Aquifer is not currently used as a water supply by the Town.

Water quality in Aquifer 560 is excellent, meeting the applicable Guidelines for Canadian Drinking Water Quality, set out by Health Canada and the potable water quality standards of the BC

Drinking Water Protection Act. Aquifer 560 is generally protected from surface activities by the overlying Aquitard, though water quality and quantity can be impacted and influenced by several factors, including geological/soil conditions, vegetation cover, aquitard integrity, handling and storage of potential contaminants, and proximity to saltwater. Land use and activities such as forestry, aggregate mining, and urban development may impact the quality and quantity of water in both aquifer systems.

Aquifer 560 is under artesian pressure, measured as high as 35 kpa at ground level, which results in upward pressure at monitoring wells in Lower Gibsons. Penetration of the Aquitard that confines and protects Aquifer 560, specifically in Subarea 1, could cause an uncontrolled release of large volumes of groundwater under artesian pressure, and possible ground subsidence (gradual settling or sudden sinking of the soil surface) if the Aquitard is breached or disturbed in Lower Gibsons. Therefore, any intrusive activity such as drilling, test pitting, or excavations in this area requires care and caution.

#### **4. APPLICABILITY**

An Aquifer Protection Development Permit is required for any development or work requiring construction, excavation or other ground disturbance that exceeds the following depths below natural grade in any part of the development:

- 1.5 m in Sub Area 1
- 5 m in Sub Area 2
- 30 m in Sub Area 3

#### **5. EXEMPTIONS**

Exploratory work permitted through a Site Investigation Permit authorized under the Aquifer Protection Bylaw No. 1338 (2025) does not require an Aquifer Protection development permit.

#### **6. AQUIFER PROTECTION DEVELOPMENT PERMITTING PROCESS**

The development permitting process in Gibsons requires applicants to apply for an Aquifer Protection (AP) Development Permit (DP). The purpose of this development permit is to provide the Town with an opportunity to review development plans and activities and to require modifications that minimize impacts to Aquifer 560. The following is a summary of the AP DP application and review process:

1. Town staff confirm the project location and determine if the planned activities require a development permit or if they are exempt.
2. If the project requires a development permit, the applicant must submit a professional report prepared by a Qualified Professional. A Geotechnical Assessment Report is required for development on lots within Sub Areas 1, 2 and 3. Additional reports, such as monitoring plans and restoration plans, may also be necessary.

3. The Town reviews the application and may approve the proposed activity by issuing a development permit, request additional information or modifications, or reject the application based on the findings of the review.
4. The complexity of the proposed activities in the Geotechnical Assessment Report may require the Town to seek a technical review by a Qualified Professional.

The development permit process fosters collaboration among the Town of Gibsons, developers, and Qualified Professionals (QPs). QP reports are essential to identify the potential impacts of the proposed development on Aquifer 560. QP expertise and experience are required to verify the location and to recommend detailed mitigation measures that align with the objectives and guidelines of the DPA.

## 7. DP APPLICATION SUBMISSION REQUIREMENTS

In addition to a completed Development Permit Application form, the following items and reports may be required by the Town. Reports must be prepared by a Geotechnical Engineer and/or a Professional Geologist:

1. A Geotechnical Report must be submitted containing the following information:
  - a. Name(s) and qualifications of the Qualified Professional (e.g., P.Eng, P.Geo, etc.);
  - b. Summary of current site conditions;
  - c. Summary of the planned development concept;
  - d. Recommendations to ensure that the integrity of the Aquitard and Aquifer 560 are protected throughout the development process;
2. A Monitoring Plan must be developed or approved by a Qualified Professional and contain the following information:
  - a. Methodology for controlling artesian pressure, if encountered;
  - b. A remediation plan; and
  - c. A cost estimate of a) and b) above, for bonding purposes.
3. A summary of any hydrogeological and/or geotechnical investigations previously completed on the site under a Town of Gibsons Drilling Permit, per the Aquifer Protection Bylaw 1338, 2025.

## 8. DEVELOPMENT REQUIREMENTS

All applications for an Aquifer Protection Development Permit shall be accompanied by a sealed preliminary report from an appropriately Qualified Professional which must include:

1. A summary of any hydrogeological and/or geotechnical investigations previously done on the site under a Town of Gibsons Drilling Permit, per the Aquifer Protection Bylaw 1338, 2025.

2. A review and evaluation of Town’s information regarding the Aquifer 560’s location, depth, pressure, and geometry (including identification of the covering aquitard) as documented in the [2013 Aquifer Mapping Study](#), [2021 Aquifer Mapping Study Update](#), and [2024 Leapfrog Model Update](#);
3. A discussion of the expected subsurface conditions within the development site and adjacent lands, including the depths of the expected confining unit(s), upward artesian pressure exerted from the aquifer to the base of the proposed excavation. Possible additional data sources include the Ministry of Environment Groundwater Wells database;
4. Mitigation measures for potential flowing artesian conditions, including a review of Provincial resources for flowing artesian wells, practice advisories from Engineers, Geoscientists Association of British Columbia (EGBC) and the relevant Groundwater Protection Regulation (GWPR), if the development is located in Aquifer Protection Sub Area 1;
5. Conceptual foundation design, including depths;
6. Site servicing plan, if in Sub Areas 1 or 2;
7. Excavation Plan, including depths and extent of all excavations required for development;
8. Following any preliminary data collection through borings (test pits or test holes/wells) for assessment of soil conditions, the water table elevation and or aquifer pressure, a memorandum or letter report of the findings should be provided to the Town for final approval. The final engineering design report should be stamped by the QP who assumes responsibility for the design and construction and must include an evaluation of how the proposed engineering design considers and protects the Aquifer 560. This includes, but is not limited to, an assessment of the potential for heaving of the confining unit from soil removal during excavation construction.

## 9. PROFESSIONAL QUALIFICATIONS REQUIREMENTS

Documents submitted in support of AP DPA applications shall be prepared by Qualified Professionals registered with the EGBC acting under that association’s code of ethics and liabilities and subject to disciplinary action by that association. Companies and individuals operating under EGBC should adhere to the requirements of the Professional Governance Act, enforced in the Province of British Columbia for governing Qualified Professionals in the natural resource sector. If a Qualified Professional from another association (Professional Biologist or Professional Hydrologist or Certified Wastewater Practitioner) is deemed necessary in the preparation of the required documents, that individual or firm’s area of expertise must be recognized by the Town as one that is acceptable for the purpose of providing all or part of an assessment report in respect of the development proposal that is being assessed.

As Aquifer 560 is flowing artesian, the GWPR provides requirements to specifically address the role and responsibilities (including legal responsibilities) of QPs working on artesian aquifers and wells.

Development Guidelines provide measures to ensure that Aquifer 560 is protected from potential negative impacts from development.

- Review and evaluate all information available regarding the subsurface conditions of the property, including reports produced from subsurface investigations authorized by Bylaw 1338, the Town’s aquifer mapping studies, and all other available sources.
- Design and locate development to avoid negative impacts to Aquifer 560 and the aquitard.
- Development of the site must follow the Bylaw 1338 permitting process and all site excavations must be consistent with the recommendations of the Qualified Professional.