

APPLICATION FOR AUTHORIZATION TO BEGIN MINING IN THE NONVILLE LEASE AREA

DRILLING OF TEN WELLS, AND EXTENSION AND DEVELOPMENT OF THE CURRENT PLATFORM AT NONVILLE

LEASE CONTEXT AND LOCATION

The lease known as Nonville has been granted to Bridgeoil by the Decree of 17 July 2009 for a 25-year period (until 19 July 2034). The lease covers a surface area of around 10 km2. Operation of the lease area is currently regulated by a Prefectoral order.

The projected development work consists of drilling new wells in the area already covered by the production site, and extending this site. The work is subject to Decree no. 2006-649 of 2 June 2006 (amended) on mining and underground storage operations and the regulations governing mining and underground storage. BRIDGEOIL is therefore presenting an application for authorization to operate, pursuant to article 3 of Decree no. 2006-649 of 2 June 2006 (amended). **This application relates to the Nonville lease, and only to the exploitation of so-called “conventional” hydrocarbons.** Bridgeoil undertakes to comply with Law no. 2017-1839 of 30 December 2017 – art. 6 (V) (articles 111-13 and 111-14) that prohibits the use of hydraulic fracturing or any other unconventional method in hydrocarbons exploration and production.

WORK AND SCHEDULE

The development project includes:

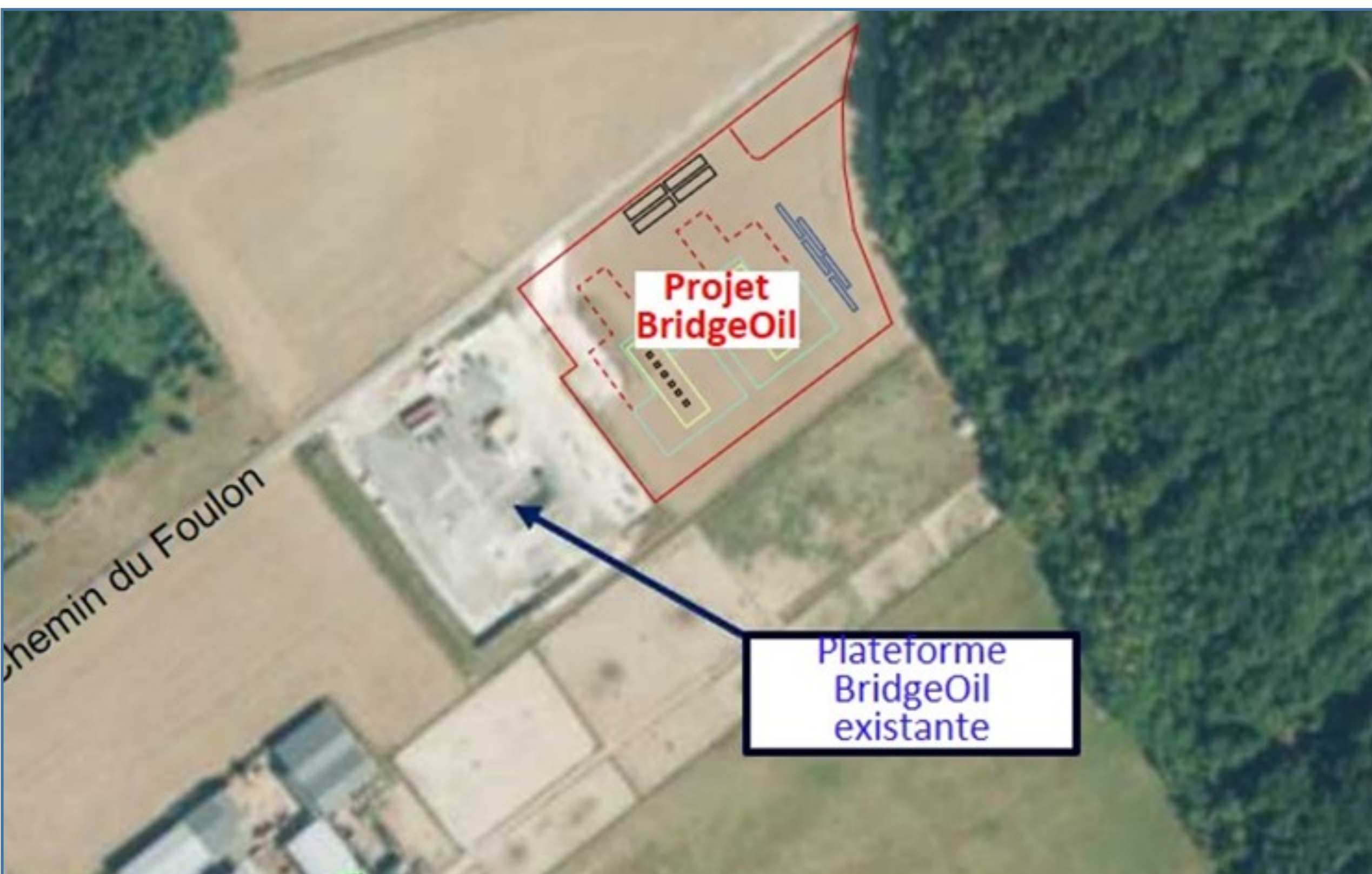
Principally, the construction of two slabs extending the existing platform to the North-East, over a total surface of about 1 hectare:

- **A Callovian slab, in which a maximum of 6 horizontal wells will be drilled into the “Callovian” reservoir** located at a depth of 1510 m; one of the wells can be used exclusively for injecting the reservoir water.
- **A Chaunoy slab, to enable reconnaissance of the Chaunoy sandstone reservoir (Keuper Triassic series) located 2150m underground (a maximum of 4 deviated wells will be drilled if the geological and structural conditions are confirmed);** one of the wells can be used exclusively for injecting the reservoir water.

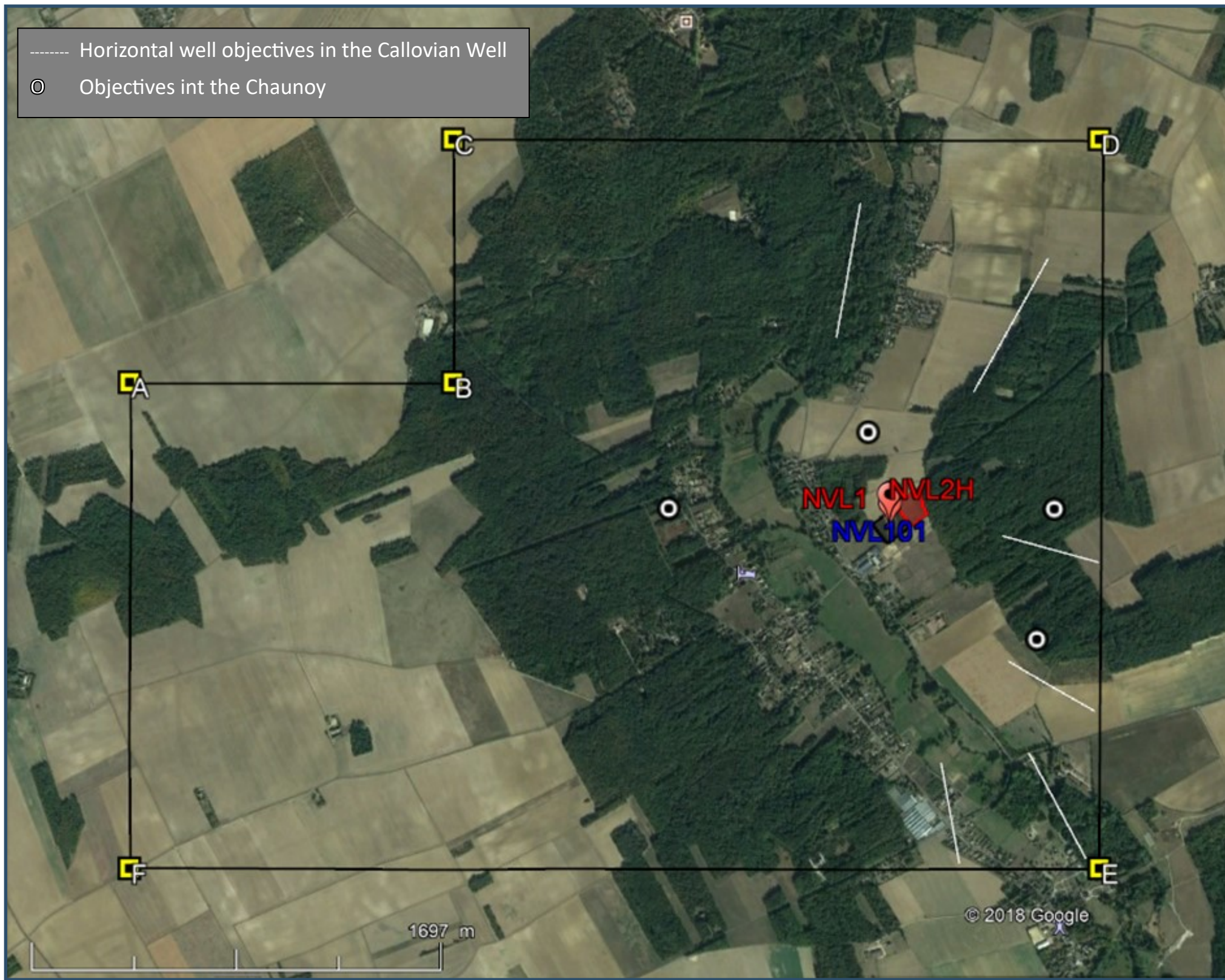
Additionally, minor adjustments to the existing production facilities, if the drilling finds its targets successfully:

A manifold to convey the produced substances from the new wells to the existing production cluster (site grouping several wellheads together), with dedicated facilities for each type of fluid.

Some other minor alterations to the existing production cluster.



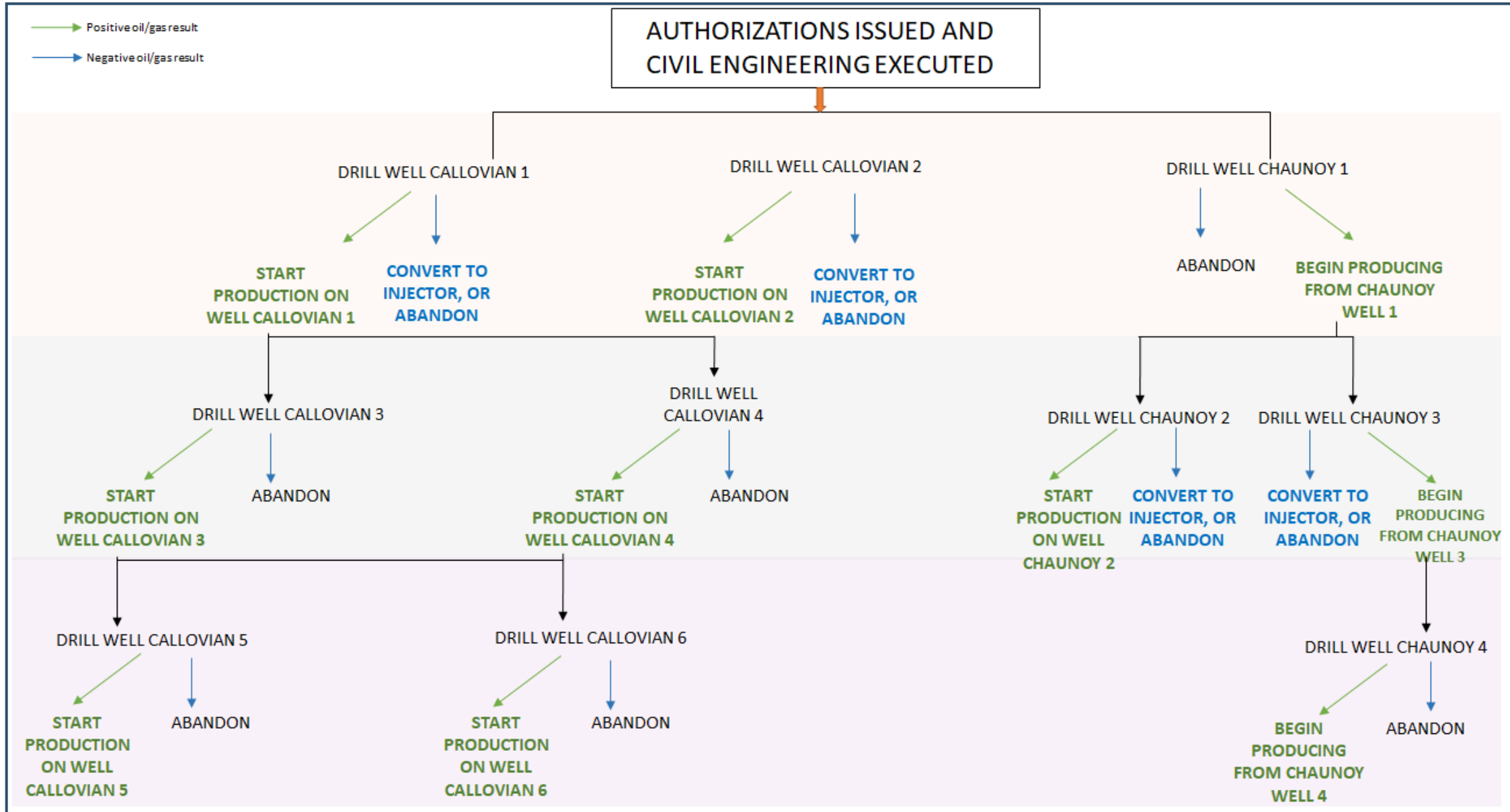
Localisation des travaux.



The well objectives (underground objectives shown on the surface)

**The quoted number of wells is the maximum that will be drilled.** It may change depending on the results obtained during the process of drilling new wells. Each drilled hole effectively yields new information about the nature of the rocks crossed and the quality of the reservoir. This information makes it possible to adjust the geological models in place. These models provide an interpreted image of the subsurface, and will aid in making decisions about where to perform new drilling on the field. This will in no way change the impact at the surface, because the wellheads will be put in from the single platform. It is only the well type (producer or injector) and the target details that will change depending on the reservoir qualities encountered. As things stand, Bridgeoil is only planning to drill one well in 2021.

**This plan may change, being dependent not only on the results obtained as development progresses, but also on changes in the general economic situation.**



Planning prévisionnel des travaux.

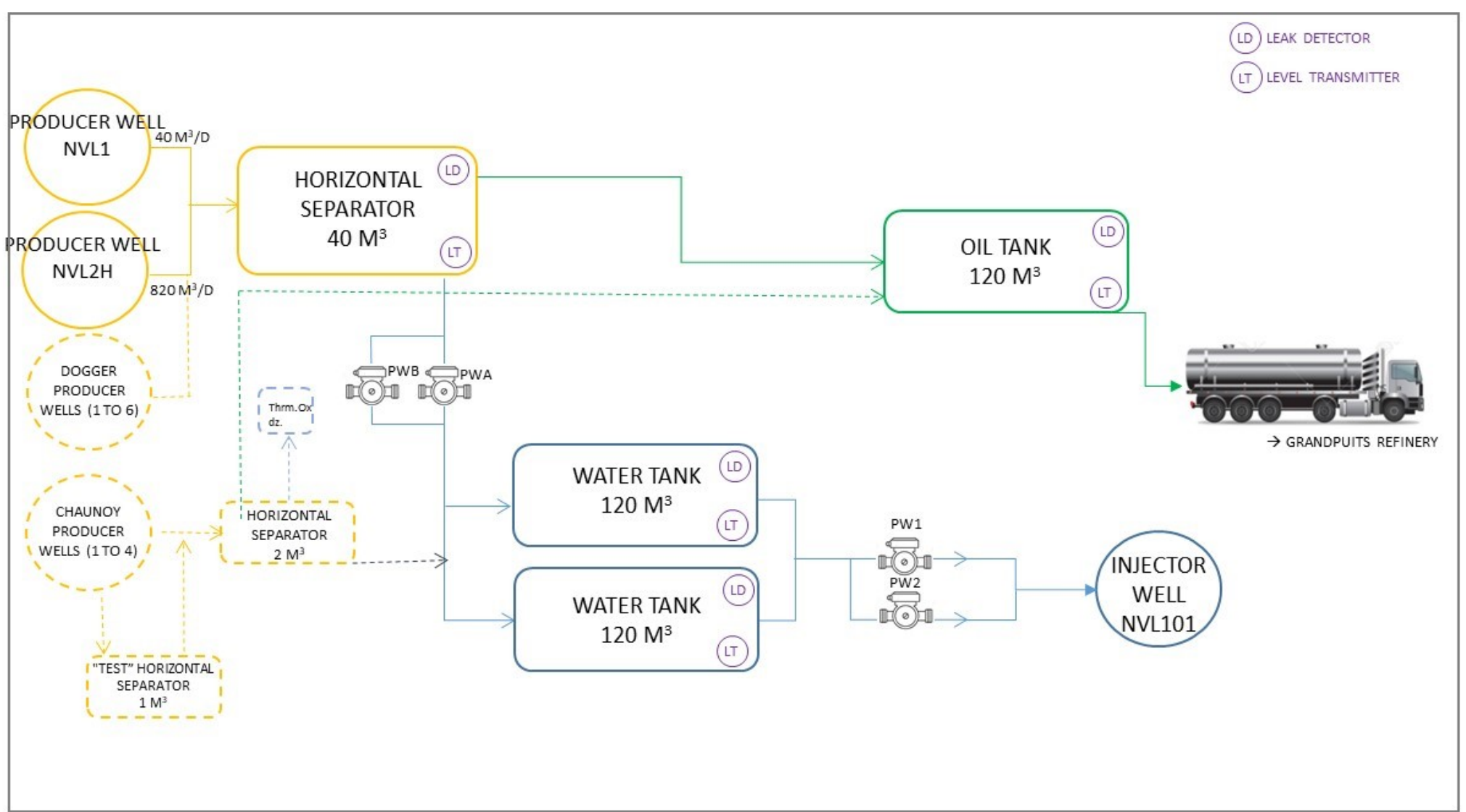


Diagram showing current (solid line) and future (dashed line) process equipment on the Nonville site

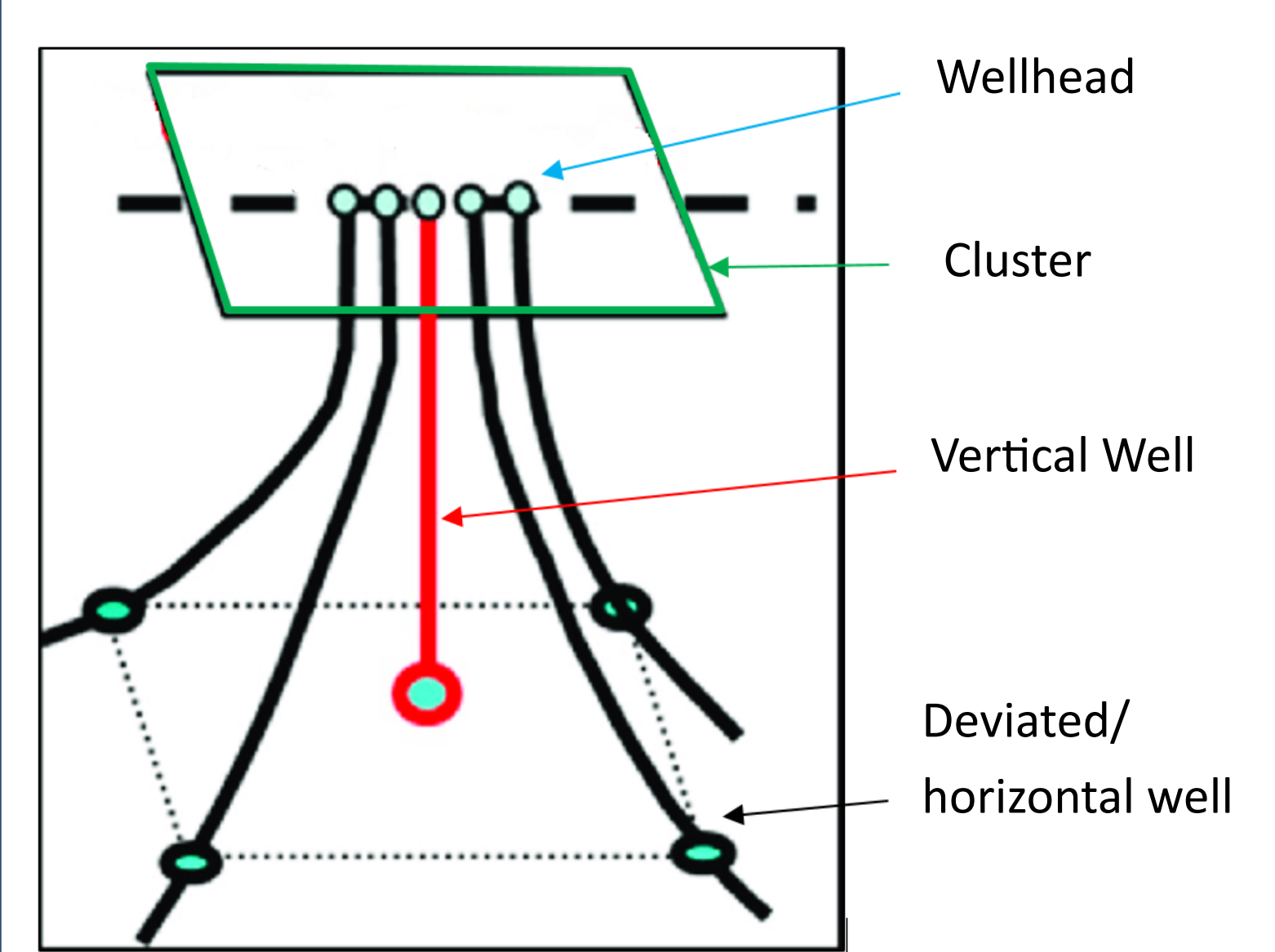
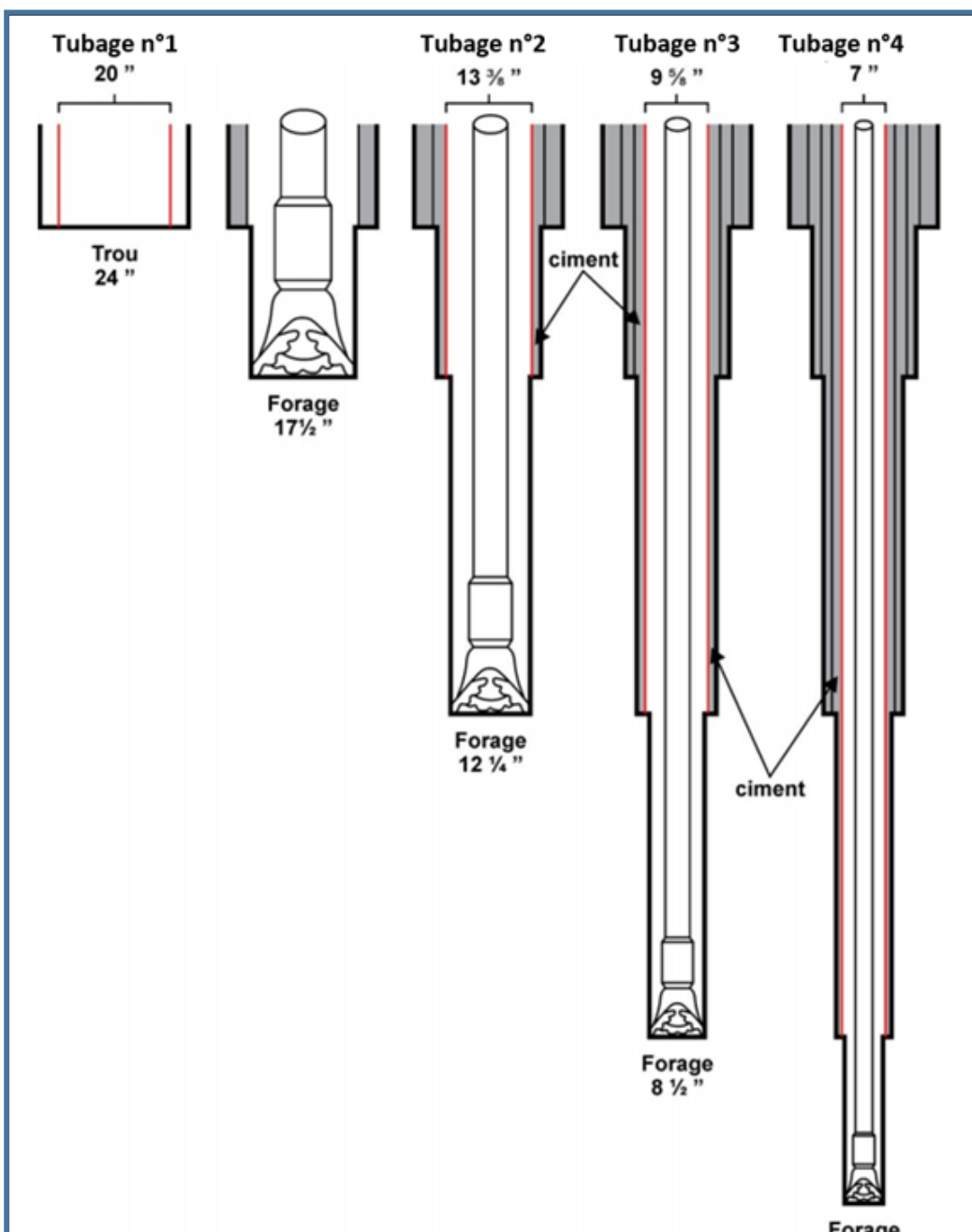


Diagram of a cluster with 5 wells

A few figures:

- Duration of the phase of bringing in and setting up the drilling rig and its environment: 2 weeks
- Number of loads: 45 (transported and assembled on-site)
- Drilling duration for one well: 4 weeks
- Cost to drill a horizontal well (Callovian area): €2,980,000
- Cost to drill a deviated well (Chaunoy area): €3,280,000



Technical cross-section of phase-by-phase well drilling (Source: J.P. Nguyen, 1997, modified).

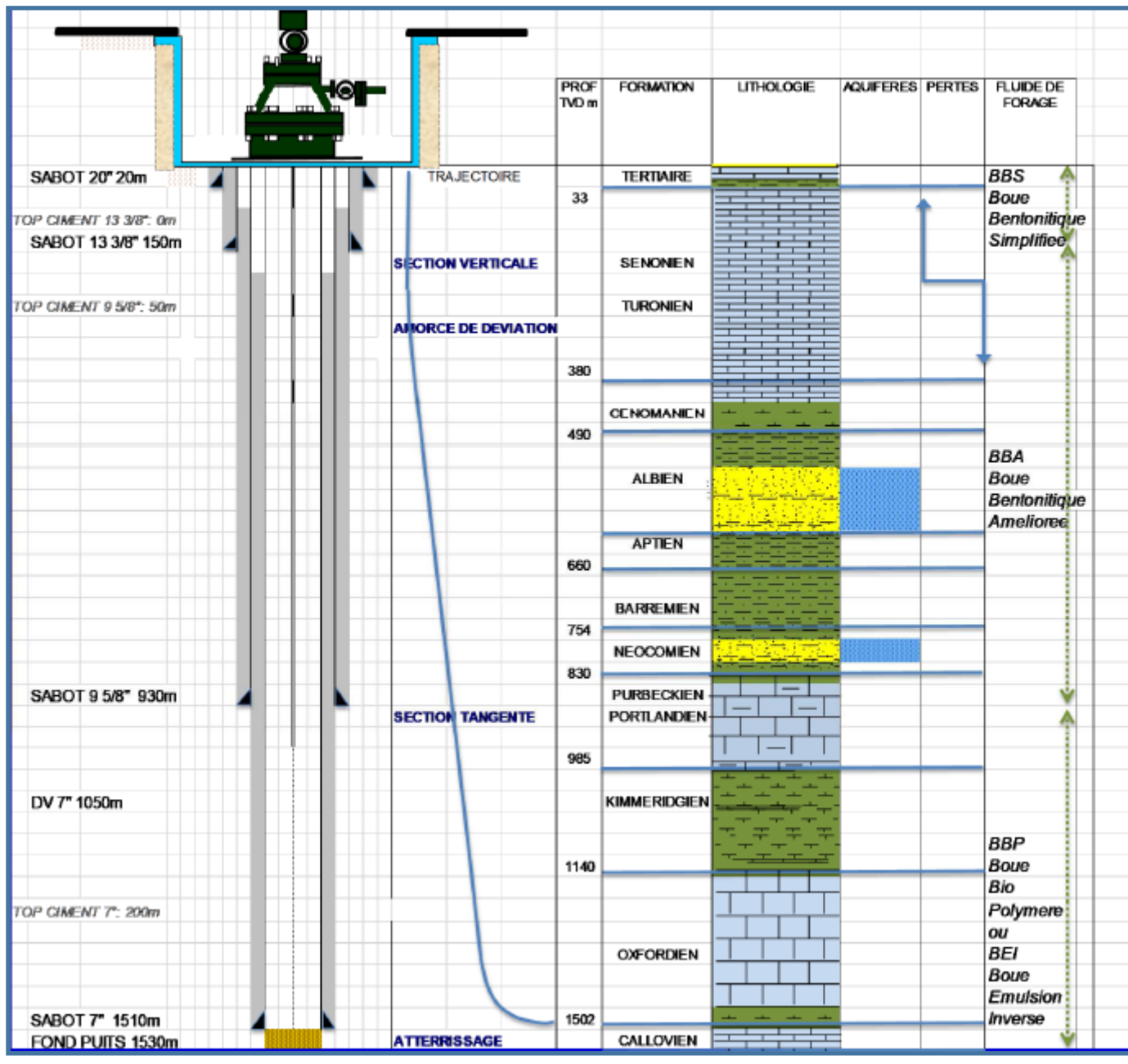
When the Prefectoral order authorizing the work has been issued, Bridgeoil will send to the Prefect, for each drilling location, a detailed schedule of the operations 3 months before they are due to begin. The public water utility “Eau de Paris” and the Regional Health Agency with local jurisdiction will be informed of this drilling work and the methods employed.

In particular, the schedule will provide details of the casing and cementing plan. If chalky formations are encountered, cemented casing will be installed before work proceeds further. The drilling plan will be studied attentively to avoid mud losses.

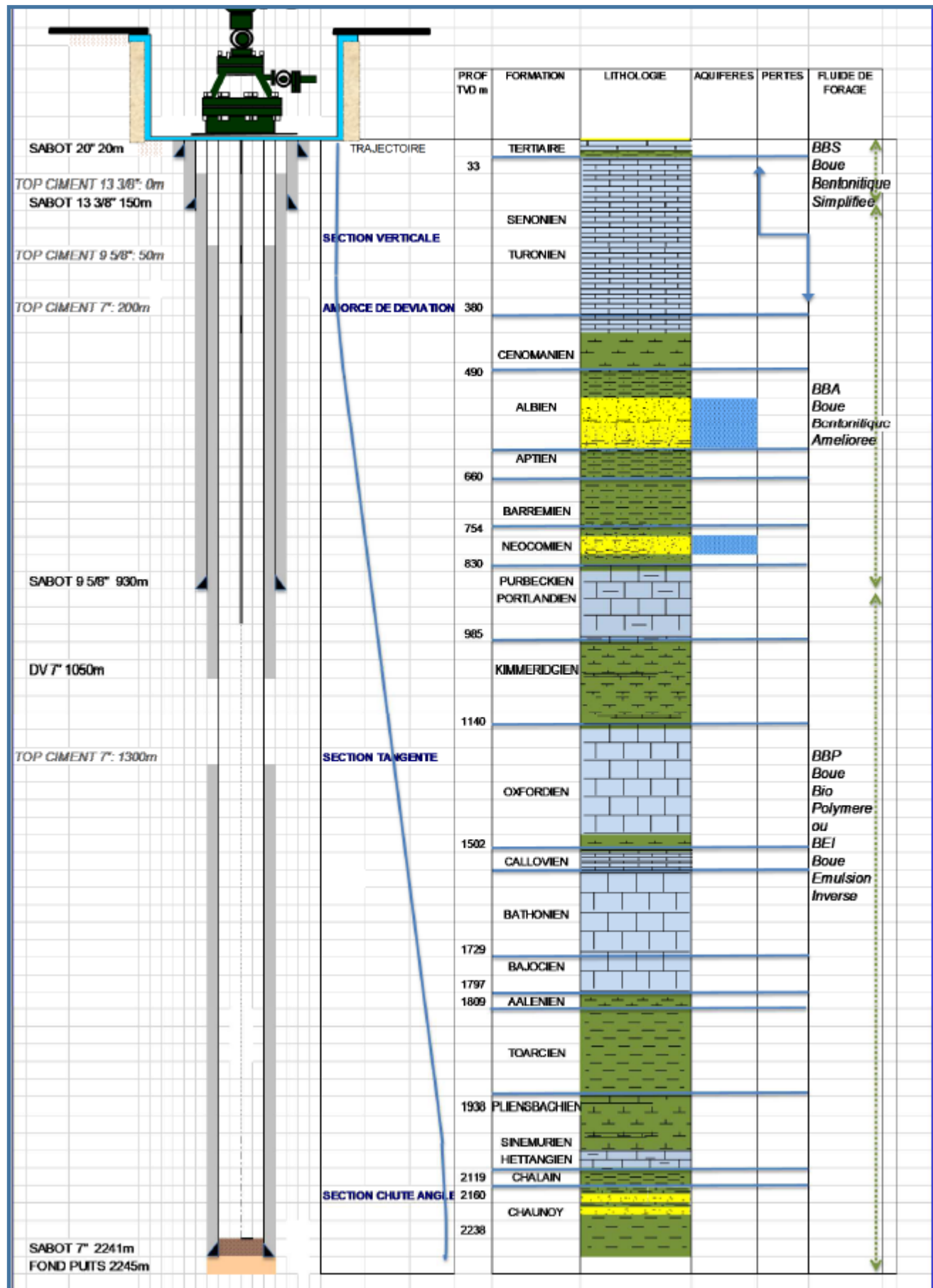
**In all cases, aquifers will be protected and sealed off by at least two cemented casing layers (three for the superficial aquifer in the chalk formation).**

A few figures:

- Use of the town’s water (for washing facilities): 60 m3/year (without drilling), 260 m3/year (with drilling).
- Use of the site’s underground spring water well (for drilling, firefighting reserve): 50 m3/year (without drilling), 1200 m3/year (with drilling).



Cross-section diagram of a Callovian-area well



Cross-section diagram of a Chaunoy-area well

MEASURES TO REDUCE ODOR NUISANCE

The Nonville site produces water that has a very low H2S (Hydrogen Sulfide) content compared to other oil fields in the world (e.g. up to 150,000 ppm for Lacq). Its H2S concentrations are also lower than those at many geothermal sites or thermal baths in the Paris Basin (e.g. Enghien-les-Bains). H2S is also present, sometimes in quantities exceeding 1000 ppm, in the gases produced by fermentation of manure (to make biogas).

Following trials of methods to deal with unpleasant odors, Bridgeoil is setting up a gas washing process (along similar lines as the “salt” system for treating swimming pool water). The aim is to destroy the H2S without adding new compounds. Using Sodium Hypochlorite (NaOCl) to destroy H2S transforms the latter into sulfates and chlorides, both of which are soluble in water. These two compounds are naturally present in water (including sea water), which means they are among the main constituents and are non-toxic. It is not possible for chlorine to be given off under the pH conditions of the water, because all the NaOCl

produced by the process reacts with the H2S, and all the soluble, non-toxic products formed will be injected back into the reservoir they came from. Given the small quantities of chlorides and sulfates formed by this reaction due to the low H2S content, this process will have no impact on the composition of the reservoir water after extracting the oil.

The wells release nothing directly into the atmosphere. Releases only occur through three vents on tanks (separator, crude oil storage, buffer water storage). Consequently, the washing column can be used for the existing wells and also future wells, if applicable. Releases from the three existing vents are sent to the washing column. **Measurements at the washing column output will soon enable us to confirm the effectiveness of this system.**



Photograph of the washing column on the Nonville site.

MEASURES TO REDUCE SOUND NUISANCE

In the works phase, noise will be measured, as for during previous drilling activities. From the beginning, steps will be taken to keep sound nuisance to a minimum. If, however, the authorized thresholds are exceeded in neighboring residential areas, Bridgeoil will do its utmost to adopt reduction measures as and where needed.

In the operation phase, a new set of noise measurements will be taken to ensure there is no sound nuisance in nearby neighborhoods. Bridgeoil undertakes not to fit future wells with walking beams (which can be noisy), but instead to use pumps such as ESP (electric submersible pump) or PCP (progressive cavity pump) to produce from these wells.

Furthermore, if production increases and more than 10 tank trucks are needed each week to ship out the crude, Bridgeoil commits to move the crude loading station, via a manifold, to another plot, in agreement with the landowner/user and the town hall.



Photograph of the wellhead for well NVL2H, equipped with an ESP (Nonville site).



Photograph of the wellhead for well NVL1, equipped with a PCP (Nonville site).

ECONOMIC DATA

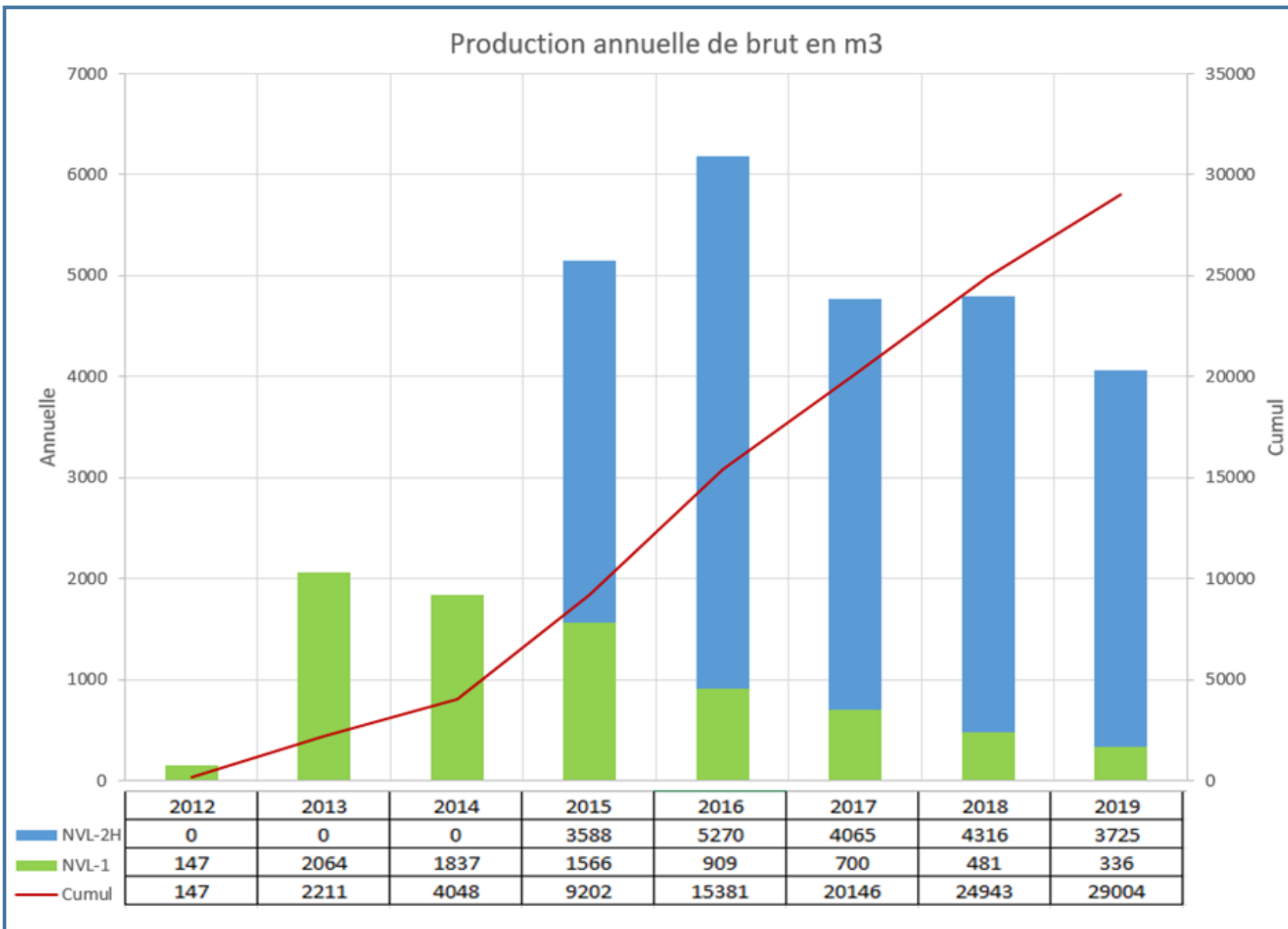
Owing to its quality and low production costs, the oil produced at Nonville, and in the Paris Basin generally, is one of the key elements in the viability of this activity. Since 2012, Bridgeoil has produced more than 29,000 m3 of oil, which represents a little under 1% of France’s production. The Seine-et-Marne département produces 30% of France’s in-country oil.

At present, **oil produced in France represents just over 1% of the country’s consumption, thereby avoiding nearly 100,000 tons of CO2 emissions a year compared to imported oil.**

Since 2012, Bridgeoil has:

- Invested over 9.4 million Euros in growing its production (drilling wells),
- Drilled 1 vertical well and 1 horizontal well (both producers) and rehabilitated 1 vertical well (an injector),
- Invested more than €564k in geoscience projects and studies (geological, geophysical and reservoir studies),
- Invested more than 1.2 thousand million Euros (€1.2 bn) in surface facilities (platform works, installations, asphalted access roads),
- Produced 29,000 tons of oil from 2012 to 2019.

Bridgeoil is contributing to local development, especially via the industrial fabric: more than ten external companies are regularly employed on the current site (1600 hours per year, all companies combined, for a production year without construction works), plus one non-outsourced job: 1 person employed on the Nonville site.



Annual crude production from the Nonville wells.

Nature of payment to governments or public entities	France	
	Field Operations	
	Quantity extracted (in hundreds of tons)	Sum
Mining royalties Local share	41.73	€45,856
Mining royalties Départementale share		€58,920
Mining royalties Management fees		€8,382
Total Local & Départemental royalties (LDR)		€113,158
Progressive mining royalties (PMR) (8% for production share ≥ 1500 metric tons)		€109,301
Total royalties (LDR + PMR)		€222,459

2019 royalties from exploitation of the Nonville lease.

Each year, the oil & gas industry collects more than 32 billion Euros for the French Treasury: this comprises €24 bn in domestic taxes for energy product use and €8 bn of VAT. Furthermore, the industry also pays more than a billion Euros in other levies and taxes (corporation tax, Territorial Economic Contribution, etc.). Article L132-16 of the new mining code (amended by Law no. 2017-1775 of 28 December 2017 – art. 41) defines “progressive mining royalties” (PMR/RPM). The royalties scale is set based on the type of products, as a percentage of the value of the production from the field. These royalties are paid annually to the French State.

The Local & Départemental royalties (RCMD in French), on the other hand, are paid by the mining leaseholder(s) as a function of the quantity of oil extracted. The tariff is set each year by an official order. The sum is distributed in accordance with articles 312 and 315 of France’s General Tax Code – appendix II.

**The financial benefits to the Nonville district will increase significantly if development of the field proves positive.**