Iin Kunta

Hervan asemakaava

Rakennettavuusselvitys

Sitowise Oy - Granlund Oy - Arup

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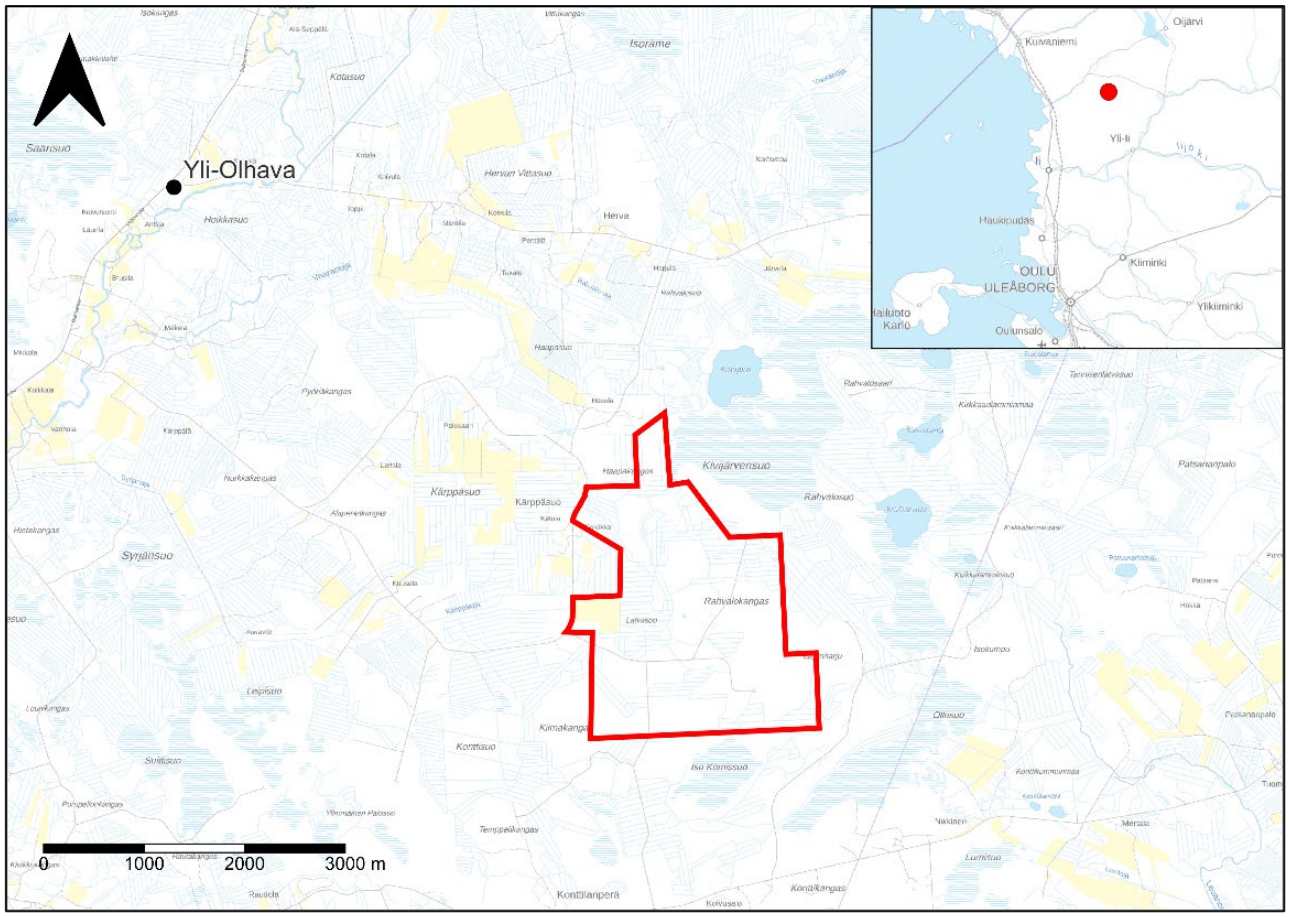
Sisältö

1. Johdanto

1.1 Projektin tausta

Hervan asemakaava-alue sijaitsee Ii:n kunnassa Pohjois-Pohjanmaalla, noin 33 kilometriä koilliseen kunnan keskustasta (Kuva 1-1). Alue sijaitsee Kärppäsuon, Rahvalokankaan ja Konttisuon maastossa. Hervan osayleiskaavan alue suunniteltuine laajennuksineen on noin 475 hehtaaria. Se on nimetty Iin strategisessa yleiskaavassa teollisuuden kehitysalueeksi [1]. Strateginen yleiskaava sisältää myös uuden sähköaseman, suunnitellun sähkölinjan ja moottorikelkkareitin selvitysalueella. Alueella ei ole tällä hetkellä voimassa olevaa asemakaavaa.



Kuva 1-1 Asemakaavan sijainti (Taustakartta: MML).

1.2 Tavoite

Tämä rakennettavuusselvitys on laadittu Hervan asemakaava-alueelle. Tavoitteena on kuvata alueen maaperän ja pohjaveden olosuhteet sekä arvioida alueen rakentamismahdollisuuksia tulevaa kehitystä varten. Arviointi tehdään saatavilla olevan avoimen datan ja tehtyjen rajallisten pohjatutkimustietojen perusteella.

[1] Ii Strategiasuunnitelma 2040

1.3 Lähtötiedot

Alueen geotekniseen ja geologiseen arviointiin käytettiin seuraavia tietolähteitä.

Julkinen tieto ja julkiset lähteet:

- Julkinen sivusto Maanmittauslaitos viitattu kesäkuussa 2025 (https://www.maanmittauslaitos.fi/en/e-services/mapsite)
  - Maastokartta
  - Pohjavesikartta
  - Ilmakuvat
- Julkinen sivusto GTK Geologinen tutkimuskeskus haettu kesäkuussa 2025 (https://www.gtk.fi/en/services/data-sets-and-online-services-geo-fi/map-services/)
  - Maaperäkartta
  - Happamat sulfaattimaat -kartta
  - Maapeitepaksuuskartta
  - Pohjatutkimukset
  - Kallioperäkartta
- Julkinen palvelu STUK Säteilyturvallisuusviranomainen (https://stuk.fi/en/radon-in-finland)

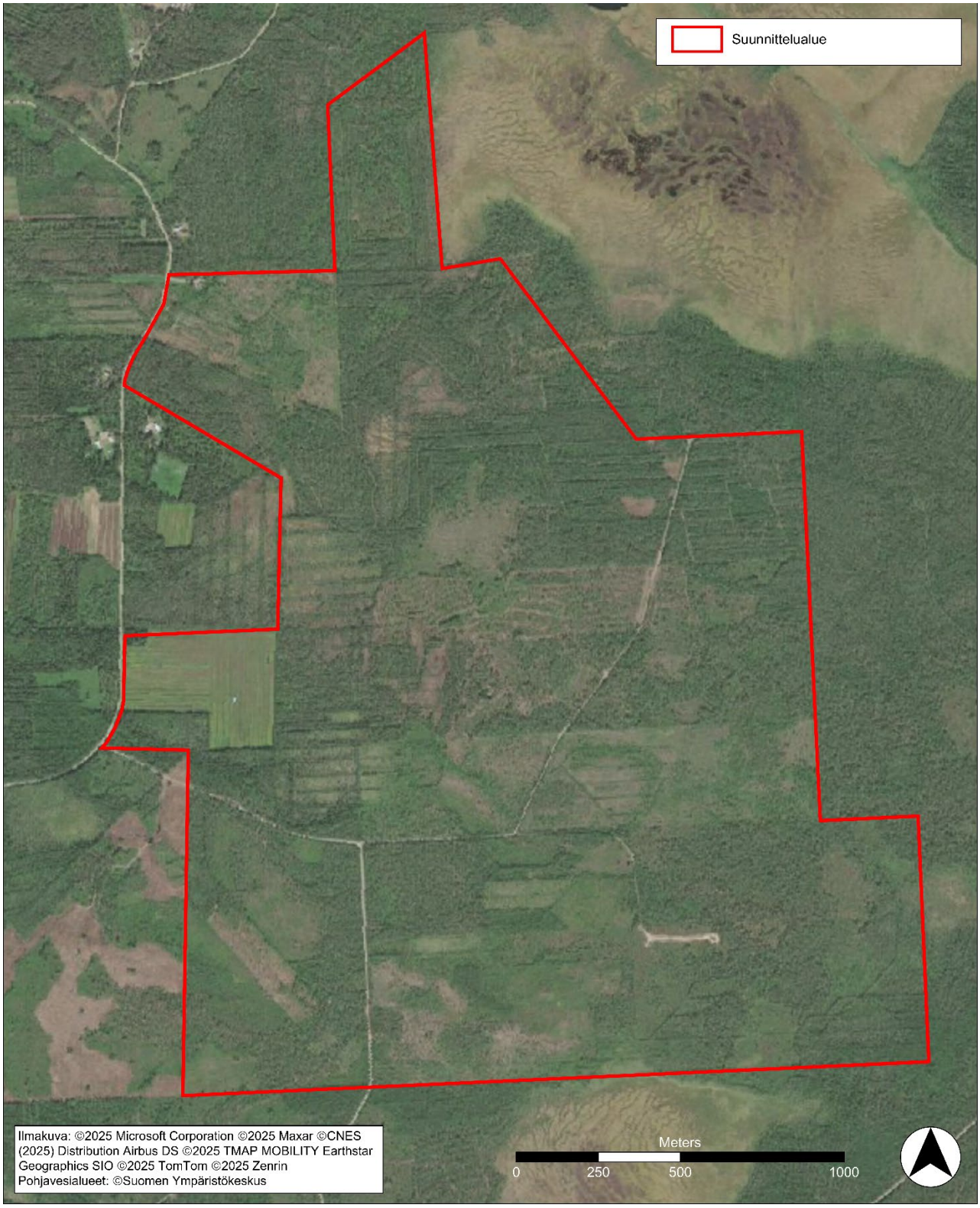
Alueen pohjatutkimukset:

  - Factual Report – Ground Investigations, Sitowise Oy – 30. huhtikuuta 2025

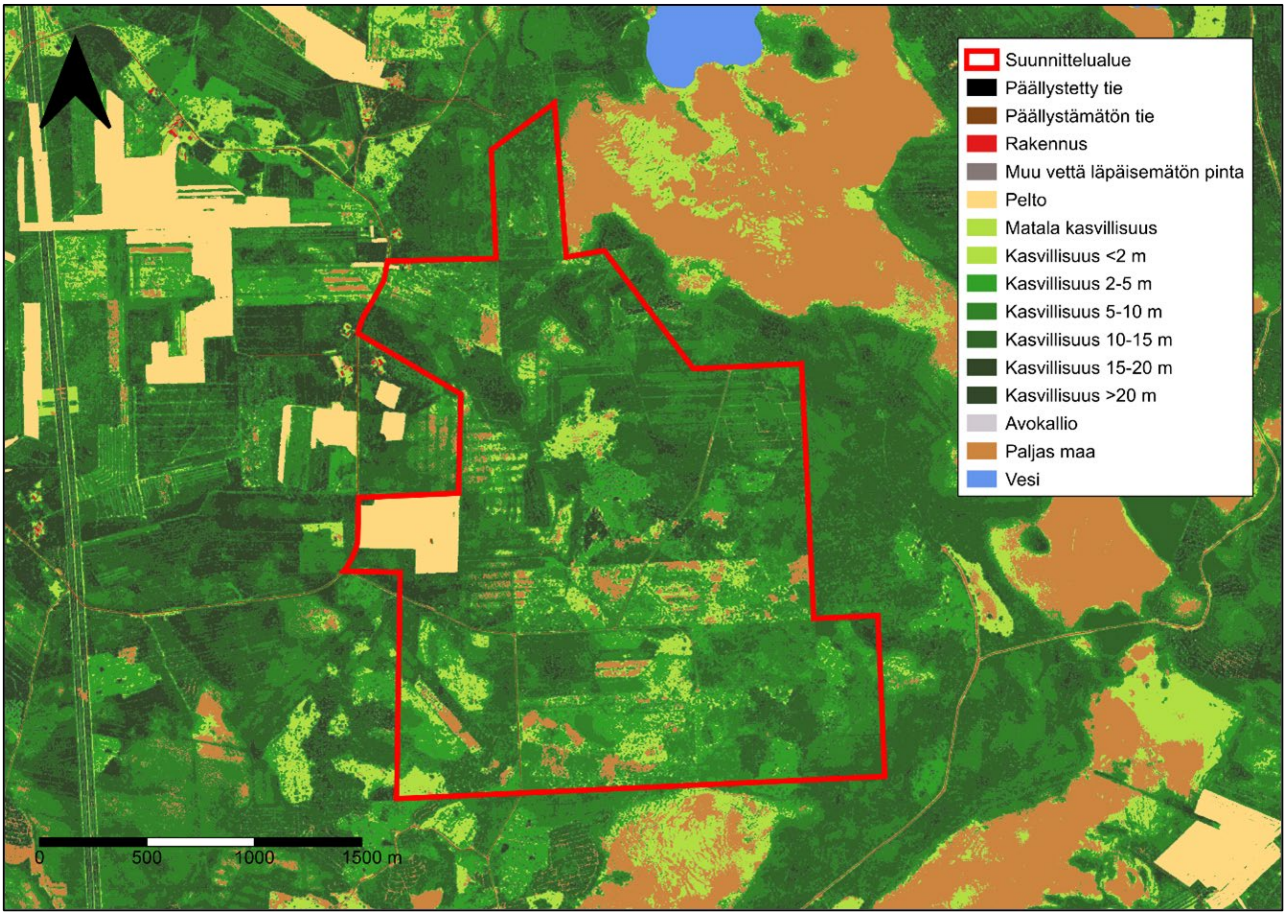
2. Kohdetiedot

2.1 Maankäyttö

Alue nykyisellään on pääasiassa rakentamatonta, ojitettua maatalous- ja talousmetsämaata (Kuva 2-1, Kuva 2-2). Lisäksi Kärppäsuontien varrella on hajanaisia asuinalueita. Muuten alue koostuu pääasiassa mäntyvaltaisista talousmetsistä, laajasti ojitetuista turvemaista ja uudelleen metsittyneistä entisistä maatalouspelloista.



Kuva 2-1 Nykyinen maankäyttö selvitysalueella ilmakuvan perusteella

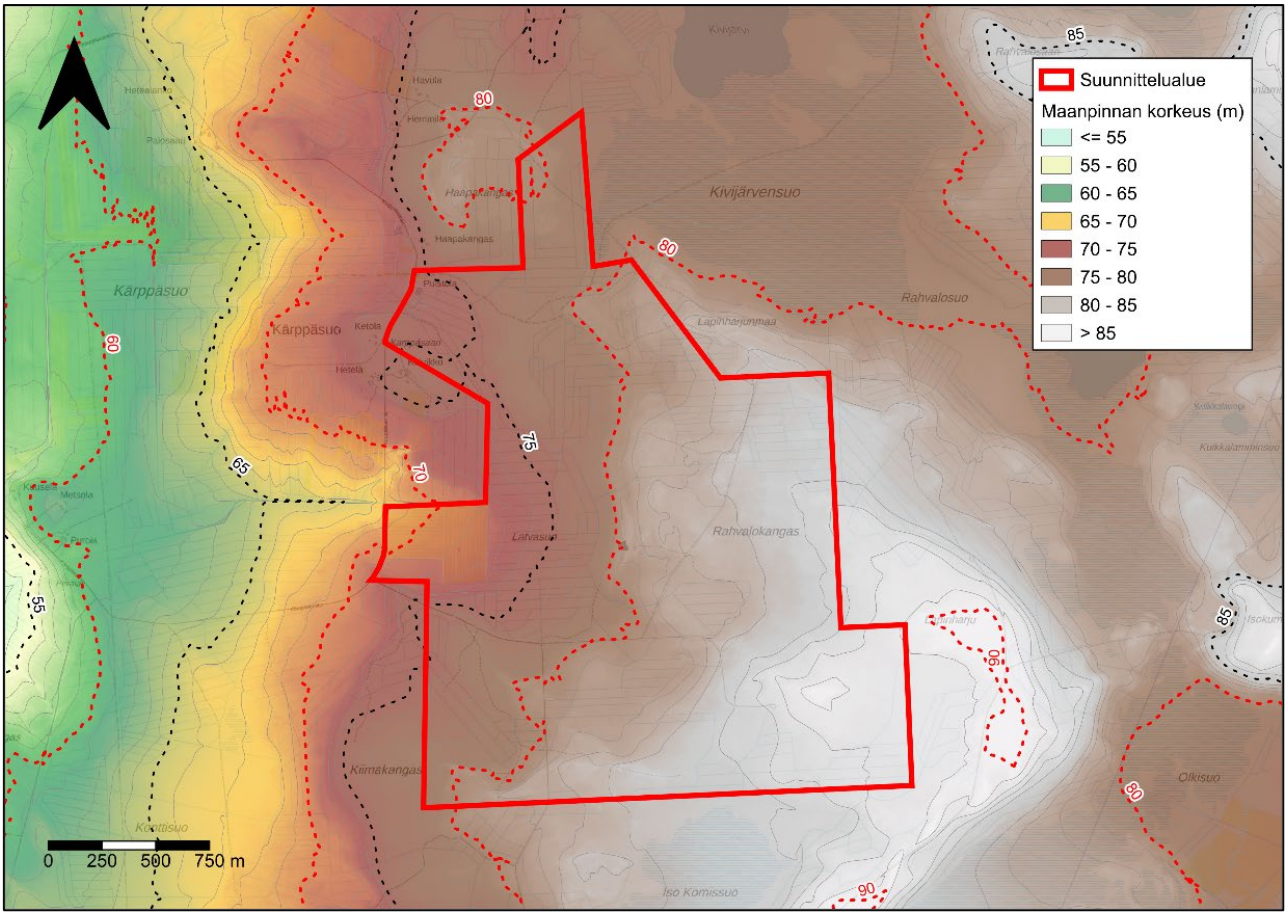


Kuva 2-2 Nykyinen maanpeite selvitysalueella

2.2 Topografia

Selvitysalueen korkein kohta sijaitsee itä- ja kaakkoisrajalla, jossa Lapinharju nousee tasoon +90. Maanpinta laskee kohti länttä ja alavin kohta on länsirajalla, Latvasuon länsipuolella sijaitseva peltoalue tasolla +70 (Kuva 2-3). Kuva

Käytetty koordinaatisto on ETRS-TM35FIN ja tasojärjestelmä N2000.



Kuva 2-3 Selvitysalueen topografia (korkeusmalli 2 m: MML)

3. Maaperä ja pohjavesi

3.1 Tutkimukset ja mittaukset

Alueelle toteutettiin pohjatutkimuksia Sitowise Oy:n valvomana 11/2024–02/2025. Alueen länsiosasta ei ole saatavilla pohjatutkimustietoa.

3.1.1 Alueelle tehdyt pohjatutkimukset

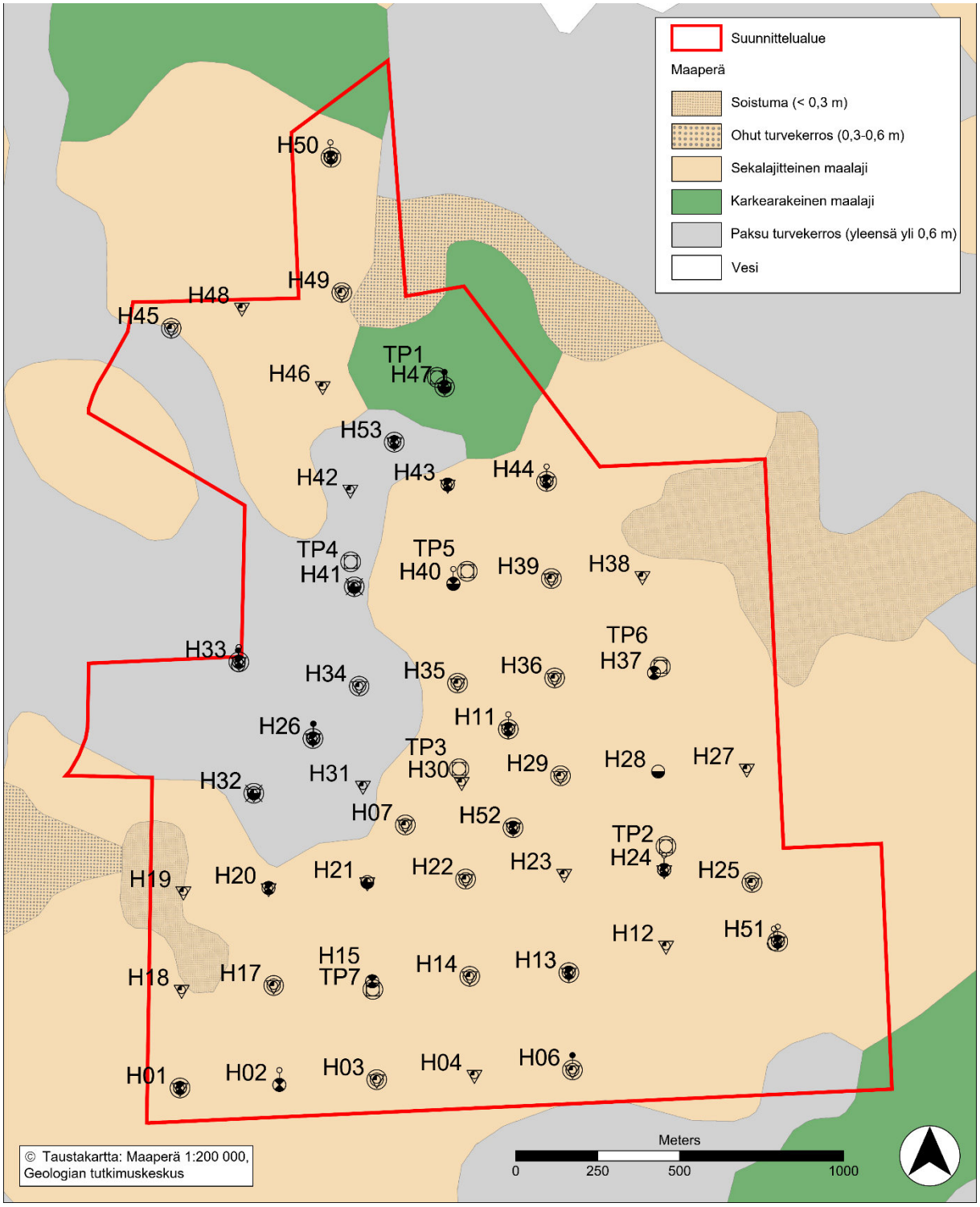
Tutkimukset sisälsivät 53 kairausta (H01−H53), 7 koekuoppaa, joiden kaivaussyvyys oli 5 m (TP1−TP7), sekä laboratoriokokeet otetuista maanäytteistä.

Tutkimuksiin kuului

- 6 painokairausta
- 2 siipikairausta
- 7 koekuoppaa
- 43 puristinheijarikairausta
- 17 porakonekairausta
- 25 häiriintynyttä näytteenottoa
- 14 pohjavesiputkea

- kartoitus
- maa- ja ympäristönäytteiden analysointi laboratoriossa

Tutkimuspisteet on esitetty Kuva 3-1.



Kuva 3-1 Pohjatutkimuspisteet selvitysalueella; GTK:n maaperäkartta taustalla.

3.2 Maaperä

GTK:n maaperäkartan perusteella alueen maaperä on turvetta, sekalajitteista maalajia (moreenia) sekä karkearakeista maalajia (hiekka ja sora) (Kuva 3-1).

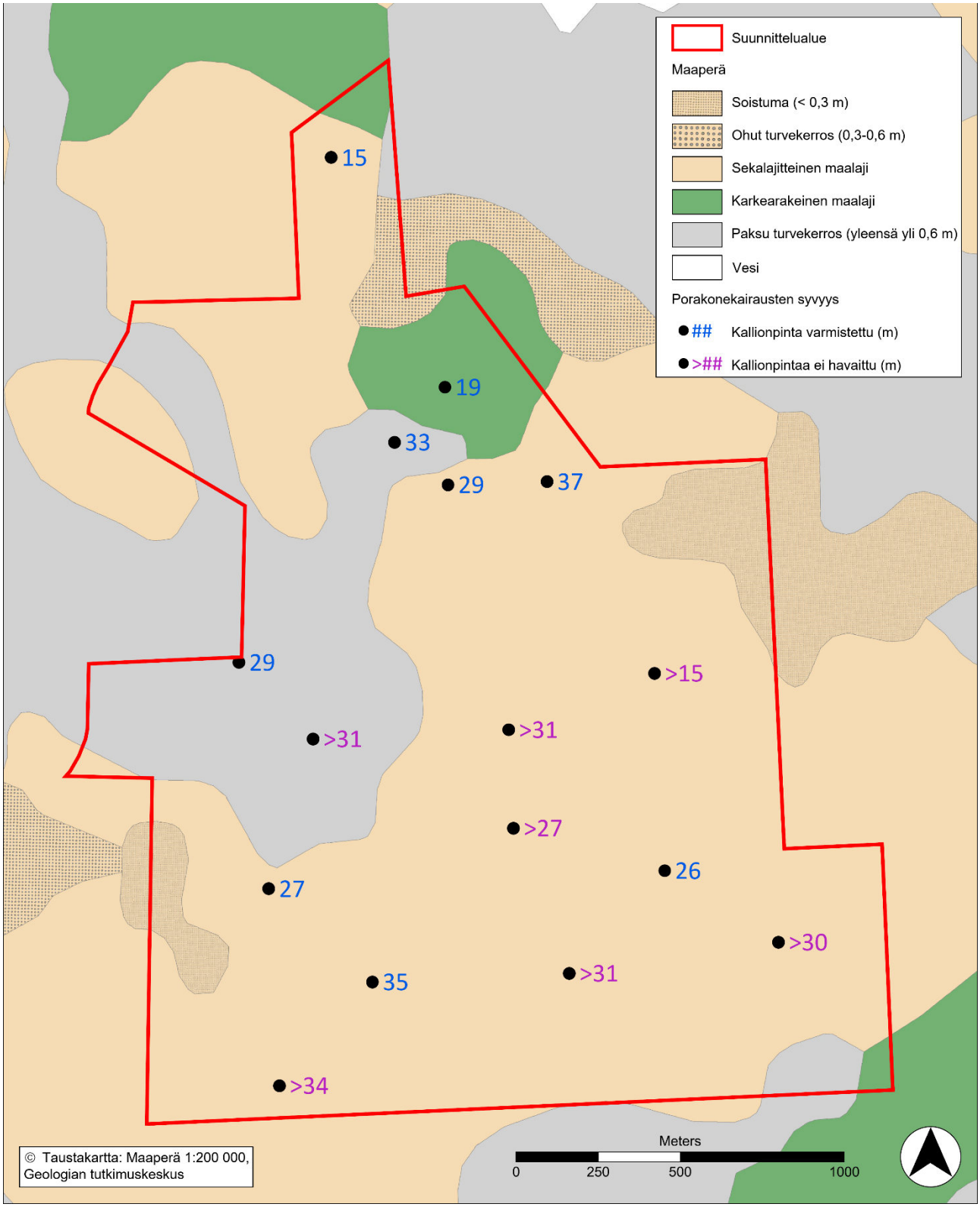
Kohteeseen toteutettujen pohjatutkimusten perusteella turvekerros on noin 1,1 m paksuinen. Turvekerroksen paksuus voi vaihdella tutkimattomilla alueilla. Pohjatutkimusten mukaan turvekerroksen alapuolella on noin 0,5…3,7 m paksu pehmeikkökerros savea ja silttiä.

Vaaleanruskea alue kartalla (Kuva 3-1) kuvastaa sekalajitteisia maalajeja, kuten moreenia. Alueen itäosassa tehdyt tutkimukset osoittavat, että moreenikerrokset alkavat 0,3–3,6 metrin syvyydellä ja ovat 14–35 metriä paksuja tiiviitä kerroksia.

Vihreät alueet (Kuva 3-1) ovat karkearakeisia maita, joissa on hienoa hiekkaa ja soraa, joiden tiiviys vaihtelee löyhästä tiiviiseen. Näiden alapuolella on moreenikerros, mahdollisesti hiekkaista tai soraista moreenia.

GTK:n tietokannan mukaan kallioperä alueella on 0…10 m syvyydellä. Pohjatutkimusten perusteella kalliopinta sijaitsee paljon syvemmällä. Kallioperän syvyys on esitetty Kuva 3-2

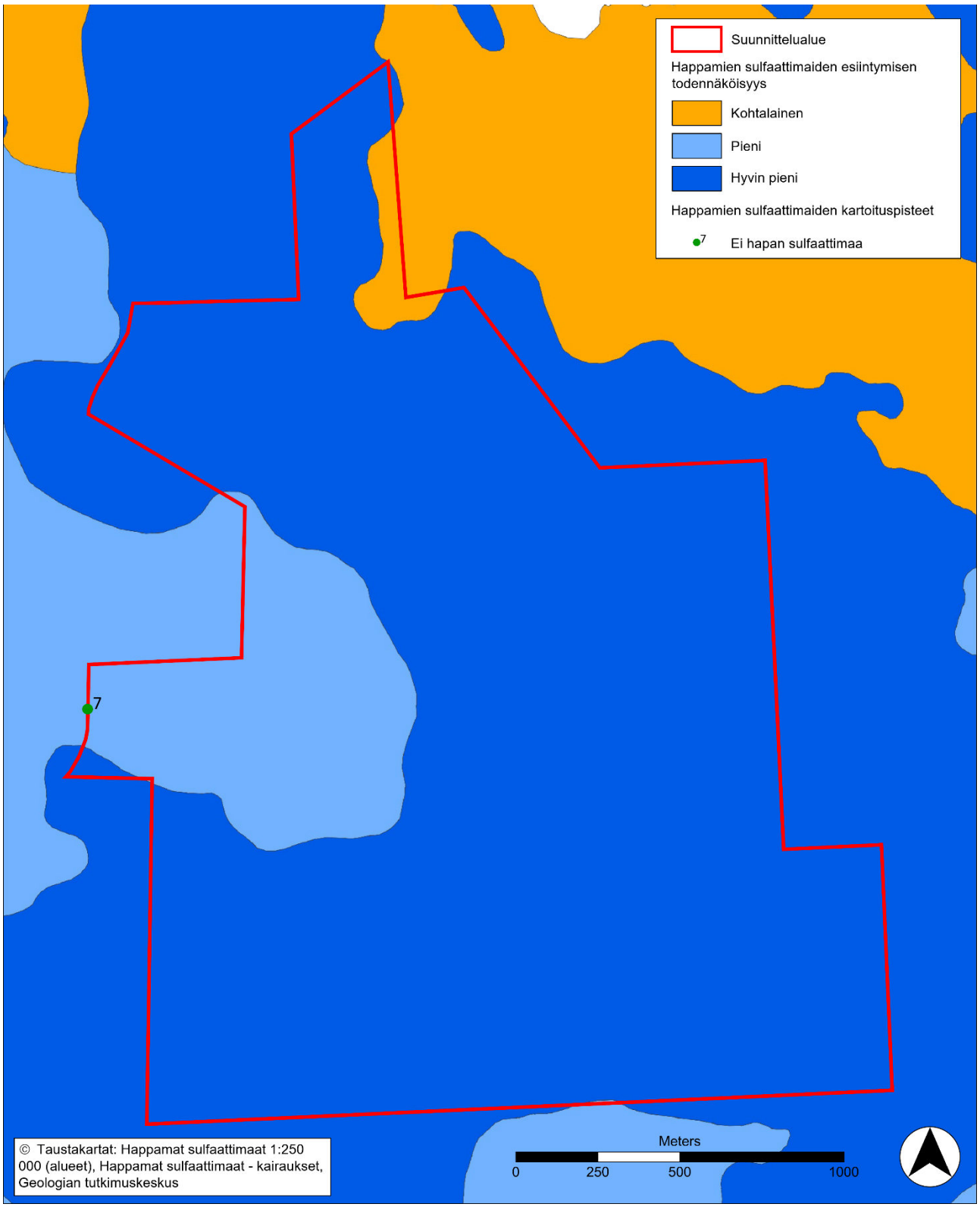
Kairauksista yhdeksän päättyi varmistettuun kallioon ja kallioperän keskimääräinen syvyys kairausten perusteella oli 28 m. Syvyys vaihteli 15,4…37,0 m välillä. Osassa kairauksista kalliopintaa ei saavutettu. Kaiken kaikkiaan peruskallio on muuta aluetta lähempänä maanpinta alueen pohjoispuolella (H47, H50) ja osa kairauksista selvitysalueen pohjoispuolella päättyi tiiviiseen maakerrokseen yli 30 m syvyydellä.



Kuva 3-2 Kallioperän syvyys ja maaperän paksuus pohjatutkimustulosten perusteella

3.2.1 Happamat sulfaattimaat

Happamien sulfaattimaiden esiintymisen todennäköisyys selvitysalueella on alhainen tai hyvin matala GTK:n "Happamat sulfaattimaat" kartan mukaan (Kuva 3-3). Todennäköinen happamien sulfaattimaiden esiintymisalue sijoittuu selvitysalueen pohjoisosaan (Kuva 3-3).Selvitysalueen länsireunassa on GTK:n tietokannan mukaan yksi tutkimuspiste happamista sulfaattimaista. Pisteen tiedot ei ollut saatavilla, mutta piste on ilmoitettu ei happamaksi.



Kuva 3-3 Happaman sulfaattimaan esiintymisen todennäköisyys värikoodauksen avulla (GTK).

Pohjatutkimusten yhteydessä toteutettiin happamien sulfaattimaiden näytteenottoja. Näytteitä otettiin 0,5 m välein 3,5 m (H47) ja 2,0 m syvyyteen (H12), yhteensä yhdeksän näytettä (Kuva 3-4). Näytteet analysoitiin ALS Finland Oy:n toimesta (akkreditoitu laboratorio). Analyysit toteutettiin Väyläviraston ohjeen Geotekninen suunnittelu – NCCI 7 (14/2023) mukaisesti. Analyysit sisälsivät hehkutushäviön, humuspitoisuuden, kloridin, vesipitoisuuden, pH:n, sähkönjohtavuuden ja sulfaatin määritykset.

Tutkimustuloksena havaittiin mahdollisia happaman sulfaattimaan kerroksia näytteenottopaikoista H47 (syvyys 1,5 m ja 3 m) ja H12 (syvyys 2 m).

Maaperä ei ole nykyisessä tilassaan hapan, mutta se voi hapettuessaan tuottaa happoa. Lisätutkimuksia tulisi toteuttaa maaperän hapontuottopotentiaalin tarkemmaksi selvittämiseksi.

Mahdolliset happaman sulfaattimaan alueet selvitysalueella on otettava huomioon hankkeen jatkosuunnittelussa. Suositellaan happamien sulfaattimaiden lisätutkimuksista. Happamien sulfaattimaiden kaivaminen alueella tulisi tehdä siten, ettei se aiheuta alueelle happamoitumista. Happamien sulfaattimaiden käsittely tulee suunnitella ennen rakennustöiden aloittamista.

Happamien sulfaattimaiden alueilla käytettävissä rakennusmateriaaleissa tulee huomioida happamien sulfaattimaiden aiheuttama korroosiovaikutus. Mahdollisten pintavesien tai pohjavesien happamuutta, joita pumpataan tai käsitellään muilla tavoilla projektin tulevissa vaiheissa, on seurattava toiminnan aikana analysoimalla näiden vesien pH-arvoa.

3.2.2 Pilaantuneet maat

Aluetta käytetään pääasiassa maa- ja metsätalouteen. Teollisuusalueita tai muita mahdollisia maaperän saastumisen lähteitä ei ole kohdealueella tai sen läheisyydessä.

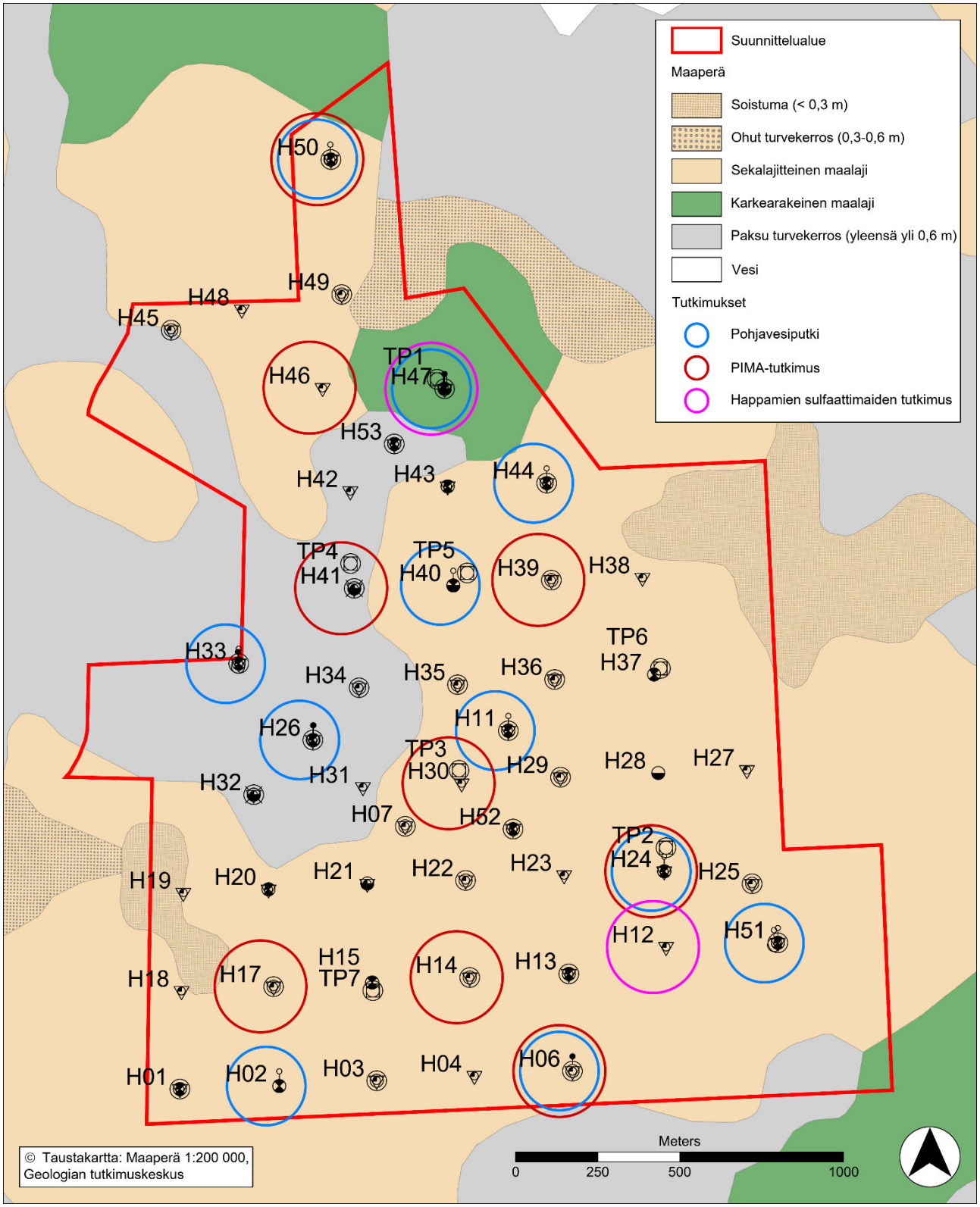
Maaperän pilaantuneisuuden tutkimuksia tehtiin osana alueen pohjatutkimuksia. Maaperänäytteitä otettiin pisteistä H06, H14, H17, H24, H30, H39, H41, H46 ja H50, ja pohjavesinäytteitä otettiin pisteisiin H11, H33 ja H44 asennetuista putkista (Kuva 3-4).

Laboratoriossa analysoitiin näytteenoton aikaisten havaintojen ja näytepisteiden sijaintien perusteella valikoiduista näytteistä (15 kpl) VNa:n 214/2007 mukaiset metallit ja puolimetallit, PAH-yhdisteet ja öljyhiilivedyt C10–C40. Kaikista kolmesta vesinäytteestä teetettiin samat analyysit. Kaikki analyysit tehtiin Eurofins Environment Testing Finland Oy:n akkreditoidussa laboratoriossa Lahdessa.

Kohteella tehdyissä maaperän ja pohjaveden pilaantuneisuuden tutkimuksessa ei todettu VNa:n 214/2007 kynnysarvoja ylittäviä pitoisuuksia tutkittuja haitta-aineita. Vesinäytteistä H44 ja H11 todettiin metallien ja puolimetallien osalta vertailuarvot ylittäviä kokonaispitoisuuksia kobolttia, kromia, kuparia, lyijyä, nikkeliä, sinkkiä ja vanadiinia. Edellä mainitut kohonneet alkuaineiden kokonaispitoisuudet selittyvät vesinäytteiden H44 ja H11 kiintoainesmäärällä (vesinäyte H44 oli hyvin samea ja H11 hieman samea kohteella olevien savikerrosten vuoksi). Vesinäyte H33 oli puolestaan erittäin kirkas, eikä tästä näytteestä todettu vastaavia kohonneita pitoisuuksia edellä mainittuja alkuaineita.

Kohteen maaperää ja pohjavettä ei pidetä pilaantuneena, sillä kaikki todetut haitta-aineiden pitoisuudet alittivat VNa:n 214/2007 kynnysarvot. Kohteen maaperällä ei ole puhdistustarvetta eikä pilaantuneisuudesta tai jätteellisyydestä aiheutuvia rajoitteita. Kohteen alueen pohjavedellä ole pilaantuneisuudesta johtuvaa ympäristöteknistä jatkotoimenpidetarvetta tai rajoitteita. Kohteen alueella ei katsota tehdyn tutkimuksen perusteella olevan ympäristöteknistä jatkotoimenpidetarvetta maaperän ja pohjaveden haitta-aineiden osalta.

On tarpeellista tehdä kohdekohtaisia lisätutkimuksia pilaantuneisuuden tarkempaan arviointiin ja varmistamaan, esiintyykö alueella maaperän ja pohjaveden pilaantuneisuutta ennen rakennustöiden aloitusta.



Kuva 3-4 Pohjavesiputkien, pilaantuneiden maiden ja happamien sulfaattimaiden tutkimuspisteiden sijainnit

3.2.3 Routasuojaus

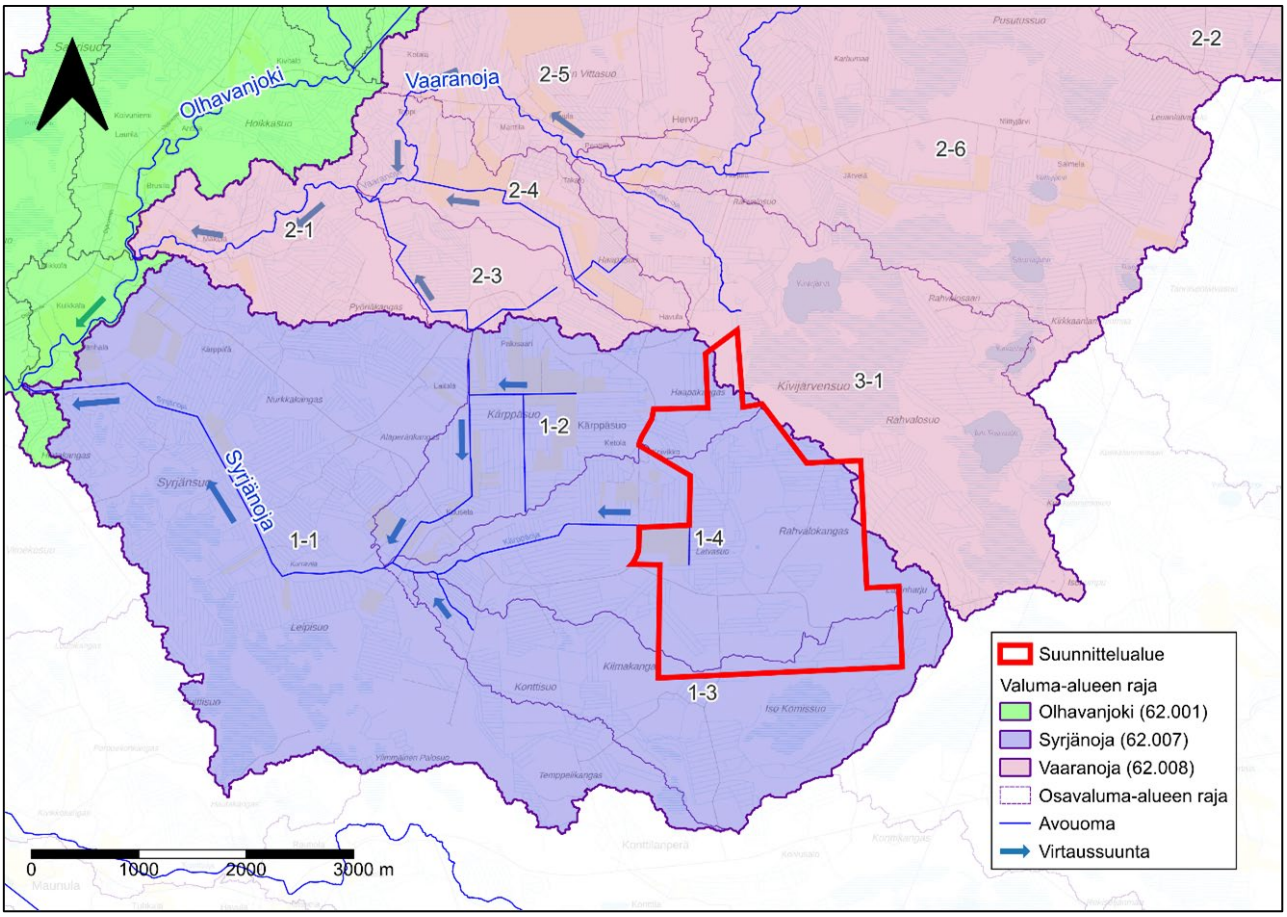
Ohjeen RIL 261-2013 Routasuojaus – rakennukset ja infrarakenteet mukaan selvitysalueella routimaton perustamissyvyys on 2,5 m, kun pohjamaa on savea ja 2,9 m, kun pohjamaa on hiekkaa tai soraa. Routasuojaus voidaan toteuttaa syvillä perustuksilla tai eristämällä.

3.3 Pintavesi

Selvitysalueella pintaveden kuivatusta säätelee kaksi pääojaa:

- Kärppäoja-pääuoma, joka johtaa suurimman osan alueen ojaverkoston valumasta länteen
- Rahvalo-oja—johtaa pienen osan valumasta pohjoisreunasta kohti luodetta Kivijärveen, ja lopulta Olhavanjokeen

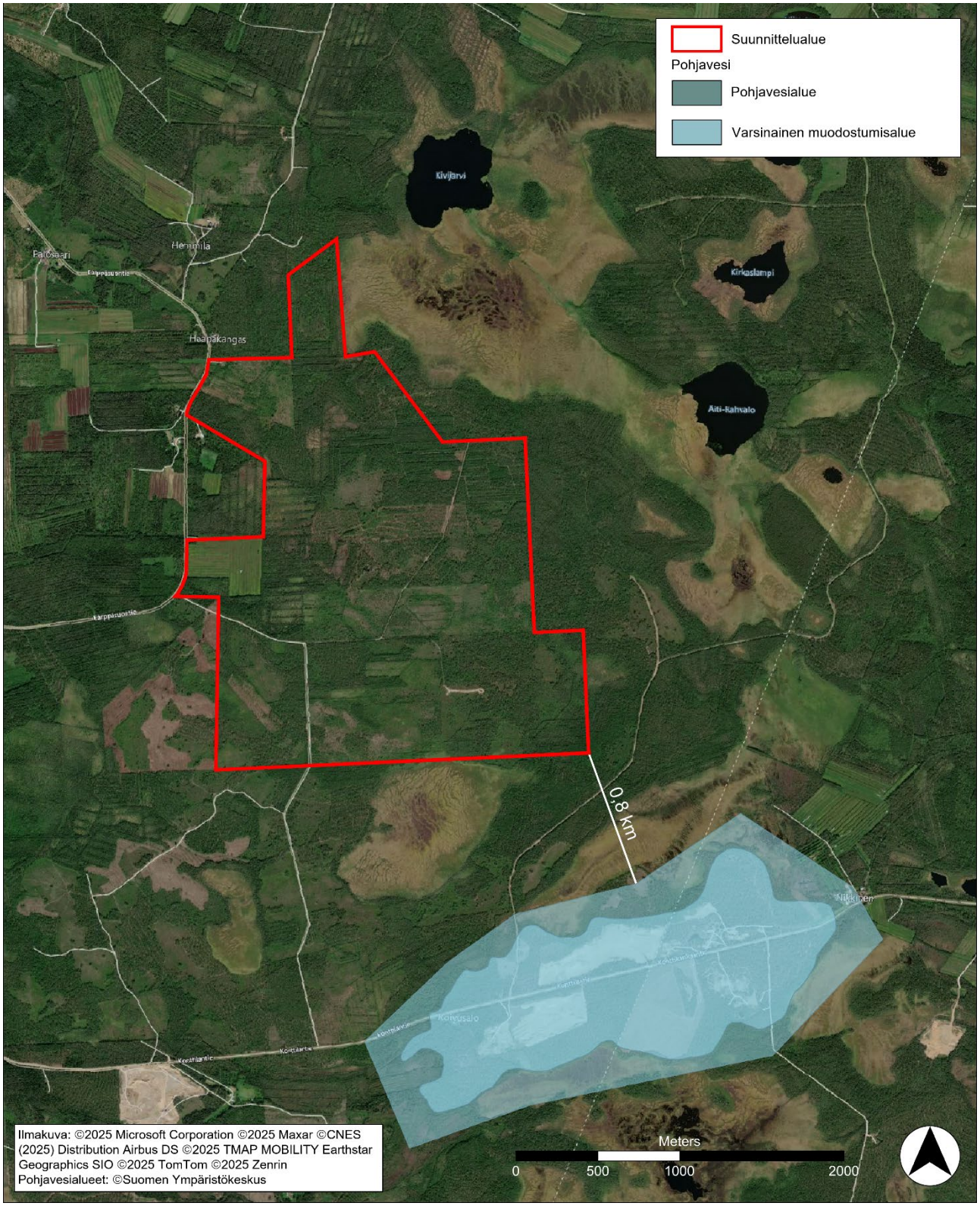
Kaikki alueen valumavesi laskee lopulta Olhavanjokeen (Kuva 3-5).



Kuva 3-5 Selvitysalueen valuma-aluejako (valuma-alueen jako: SYKE)

3.4 Pohjavesi

Suunnittelualue ei sijaitse pohjavesialueella. Lähin pohjavesialue on Konttikangas (ID: 11292005, luokka I), joka sijaitsee noin 0,8 kilometriä selvitysalueesta etelään. Pohjavesialuetta käytetään vedenottotarkoituksiin sen luokituksen perusteella. (Kuva 3-6).



Kuva 3-6 Pohjavesialue (luokka 1) lähellä selvitysaluetta

Tutkimusten aikana alueelle asennettiin 14 pohjavesiputkea pohjaveden tason seurantaa ja näytteenottoa varten (Kuva 3-4):

- Orsivesiputket (3): H26 orsivesi, H33 orsivesi, H47
- Pohjavesiputket (11): H02, H06, H11, H24, H26, H33, H40, H44, H47, H50, H51

Pohjavesiputket asennettiin siten, että niiden siivilät sijaitsivat pohjavesikerroksessa. Pohjavesiputket asennettiin pohjaveden pitkäaikaista seurantaa varten.

Orsivesiputket asennettiin orsivesiesiintymien kohdille, jotka sijaitsevat vettä läpäisemättömän kerroksen yläpuolella, tehden niistä erittäin herkkiä lyhytkestoisille, sateen aiheuttamille huokospainepiikeille.

Viimeisimmät pohjavesimittaukset tehtiin 3. huhtikuuta 2025. Pisteissä H26 ja H33 havaittiin arteesinen pohjavesi. H40:ssa ja H47:ssä havaittiin orsivettä 4...6 metrin syvyydessä. H26- ja H33-pohjavesiputkien pohjaveden taso oli 0,8... 1,8 m syvyydellä. Muissa pohjavesiputkissa havaittiin pohjavettä syvyyksissä 1,2... 6,6 m.

Pohjaveden havaintoputket antavat alustavan käsityksen pohjaveden olosuhteista alueella. Lisää tutkimuksia on tehtävä selvitysalueelta jatkosuunnittelun tueksi.

3.5 Radon

Radontutkimuksia ei ole tehty. Iin alueella ei ole tiedossa kohonneita radonpitoisuuksia ja kalliopinta selvitysalueella sijaitsee syvällä. Suunnittelussa otetaan huomioon radonin esiintyminen (riippumatta siitä, esiintyykö sitä luonnostaan kohteessa vai tuodussa kiviaineksessa). Radonin testaaminen ei ole tarpeen tai pakollista kohteen jatkokehittämisen kannalta.

4. Rakennettavuus

4.1 Yleiset

4.1.1 Rakennettavuuskategoriat

Asemakaava-alue jaetaan kolmeen kategoriaan I, II ja III rakennettavuuden perusteella. (Kuva 4-1). Kategoriat on valittu lähtötietojen arvioinnin ja saatavilla olevan pohjatutkimusdatan tulkinnan perusteella. Kategoriat ohjeineen ovat alustavia ja jatkosuunnittelun yhteydessä tulee tehdä lisää kohdekohtaisia pohjatutkimuksia.

- Kategoria I: Alueella on suotuisimmat pohjaolosuhteet rakentamiselle vähäisillä pohjanvahvistustoimenpiteillä, esimerkiksi vähäisellä massanvaihdolla tai esikuormituksella. Rakennukset voidaan todennäköisesti perustaa maanvaraisesti. GTK:n tietojen ja pohjatutkimusten perusteella alueen itäosasta Kategoria I vastaa pääasiassa karkearakeisia maita (hiekka ja sora) (Kuva 3-1). Karkearakeisen maalajin oletetaan olevan lähellä luonnollista maanpintaa.
- Kategoria II: Alueen pohjaolosuhteet vaativat enemmän toimenpiteitä verrattuna kategoria I, esimerkiksi massanvaihto, esikuormitus tai mahdollinen maaperän stabiloiminen. GTK:n tietojen ja itäosan pohjatutkimusten perusteella alueilla voi olla löyhää/pehmeää maata, jonka syvyys vaihtelee 1–3 metrin välillä nykyisestä luonnollisesta maanpinnasta. Alueilla, joilta ei ole pohjatutkimustuloksia, löyhän/pehmeän maan paksuus voi olla yli 3 m. Kategoria II vastaa pääasiassa sekalajitteisia maa-alueita.(Kuva 3-1)
- Kategoria III: Alueella on rakentamiselle vähiten suotuisat pohjaolosuhteet (Kuva 3-1). Alueen turpeen paksuus on tuntematon ja rakentaminen vaatii eniten toimenpiteitä, esimerkiksi syviä massanvaihtoja, paaluperustuksia raskaasti kuormitetuille rakenteille, maaperän stabilointia ja alueen kuivatusta. Turvealueet ovat matalammalla kuin ympäristönsä ja siksi oletettavasti kosteita, mikä on havaittu tutkituilla alueilla. Turve on poistettava rakennusten alta. Lisäksi turpeen alla voi olla muita pehmeitä maakerroksia.

4.2 Kategoria I

4.2.1 Rakennukset

Rakennukset voidaan perustaa maanvaraisesti. Ohut massanvaihto tai esikuormitus voi olla tarpeen.

4.2.2 Tiet ja pihat

Tiet ja piha-alueet voidaan rakentaa pohjamaan varaan pinnan turvekerroksen poiston jälkeen.

4.2.3 Putket ja johdot

Putki- ja johtokaivannot voidaan perustaa maanvaraisesti.

4.2.4 Kaivannot

Yli 2 m syvistä kaivannoista on tehtävä erillinen kaivantosuunnitelma. Matalammat kaivannot voidaan toteuttaa luiskattuina. Kaivantoluiskat tehdään 2:1 kaltevuuteen tai loivemmin.

4.3 Kategoria II

4.3.1 Rakennukset

Rakennukset voidaan perustaa maanvaraisesti 1–3 m syvän massanvaihdon avulla. Esikuormitus voi olla vaihtoehto paaluperustuksille tai massanvaihdolle. Raskaat rakennukset voivat vaatia paaluperustuksia.

4.3.2 Tiet ja pihat

Tiet ja piha-alueet voidaan rakentaa maanvaraisesti. Massanvaihto voi olla tarpeellinen.

4.3.3 Putket ja johdot

Putki- ja johtokaivannot voidaan perustaa maanvaraisesti.

4.3.4 Kaivannot

Yli 2 m syvistä kaivannoista on tehtävä erillinen kaivantosuunnitelma. Matalammat kaivannot voidaan toteuttaa luiskattuina. Kaivantoluiskat tehdään 1:1 kaltevuuteen tai loivemmin.

4.4 Kategoria III

4.4.1 Painuma

Kategoria III -alueilla painumaa voi esiintyä todennäköisemmin kuin muissa kategorioissa, koska alueella on paljon pehmeikköjä. Painuman suuruutta voidaan arvioida lisätutkimusten avulla jatkosuunnittelussa.

4.4.2 Rakennukset

Rakennukset perustetaan paaluperustuksin. 1–4 metrin syvyisille pehmeikköalueille kevyet rakennukset voidaan paaluperustusten sijaan perustaa massanvaihdon varaisesti. Rakennustöiden aikainen kuivatus on tarpeellista.

4.4.3 Tiet ja pihat

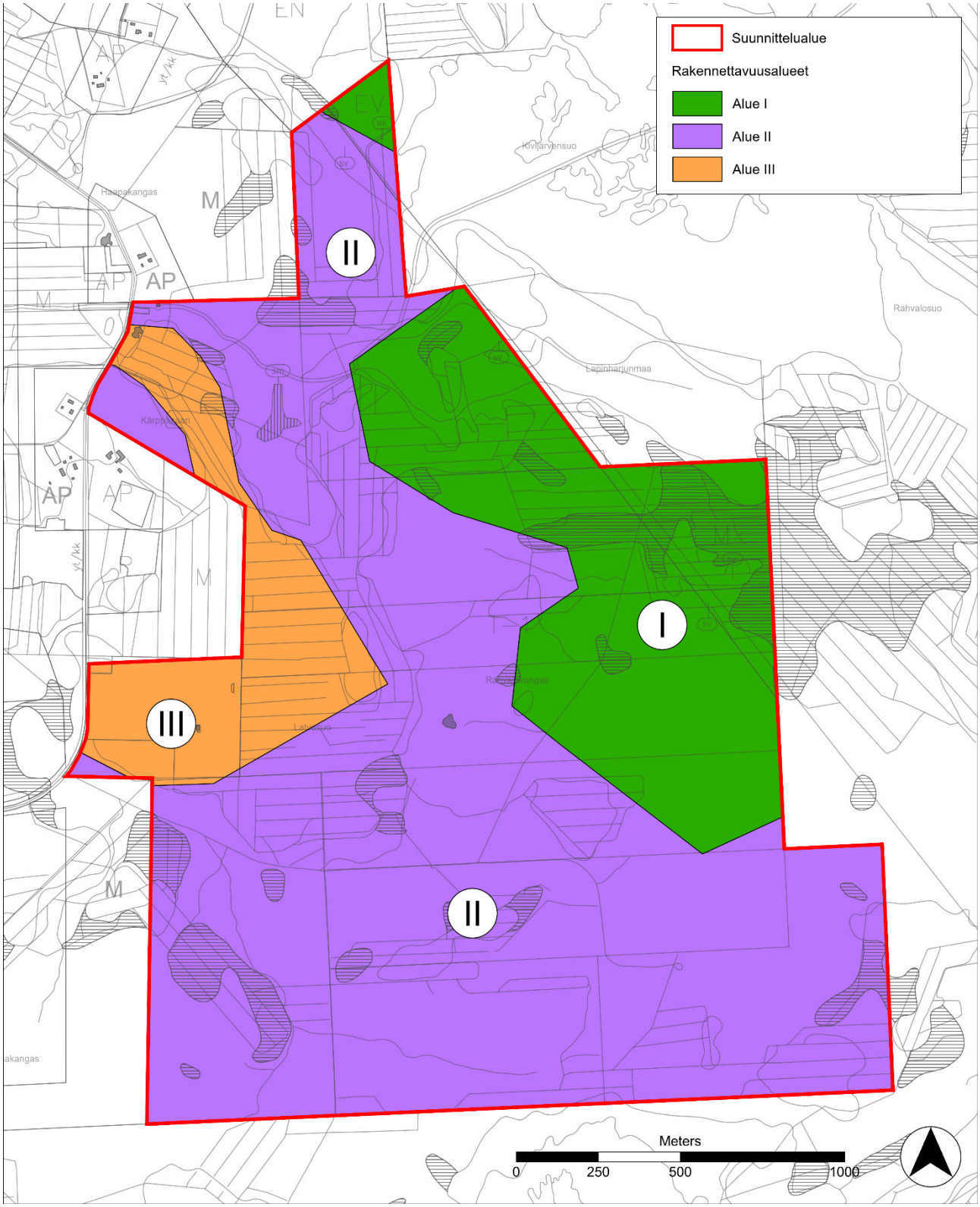
Tiet ja pihat voidaan perustaa massanvaihdon, syvästabiloinnin tai kevennysrakenteen ja geotekstiilien avulla. Alueen kuivatus on tarpeellista.

4.4.4 Putket ja johdot

Putki- ja johtokaivannot voidaan perustaa maanvaraisesti tai paalulaatoille maaperän olosuhteitten mukaan. Voidaan tarvita pohjanvahvistuksia, kuten syvä- tai massastabilointia, kevennysrakenteita tai massanvaihtoa. Kuivatus rakennustöiden aikana on tarpeellista.

4.4.5 Kaivannot

Yli 2 m syvistä kaivannoista on tehtävä erillinen kaivantosuunnitelma. Matalammat kaivannot voidaan toteuttaa luiskattuina. Kaivantoluiskat tehdään 1:2 kaltevuuteen tai loivemmin. Kaivantojen työnaikainen kuivanapito pumppaamalla on todennäköisesti tarpeellista.



Kuva 4-1. Rakennettavuuskategoriat (alueet) värikoodein

5. Yhteenveto

Tämän työn tarkoituksena oli tehdä rakennettavuuden arviointi Hervan asemakaava-alueelle Iin kunnassa. Rakennettavuus on esitetty kolmessa kategoriassa, jotka perustuvat saatavilla olleisiin avoimiin lähtötietoihin sekä selvitysalueelle tehtyihin pohjatutkimuksiin Kategoriat ohjeineen ovat alustavia ja jatkosuunnittelun yhteydessä tulee tehdä lisää kohdekohtaisia pohjatutkimuksia.

Selvitysalueelle on luokiteltu kolme kategoria: Kategoria I on suotuisin ja siinä on vähiten pohjanvahvistustarpeita, kategoria II, jossa on jonkin verran pohjanvahvistustarpeita ja kategoria III, vähiten suotuisin, jossa turpeen paksuus on suurelta osin tuntematon ja joka vaatii eniten pohjanvahvistustoimenpiteitä (esimerkiksi massanvaihtoa ja paaluperustuksia).

Maaperän ja pohjaveden happamuutta ja pilaantumista arvioitiin avoimien lähtötietojen ja tehtyjen tutkimusten perusteella. Tutkimusten perusteella alueella ei ole pilaantuneita maita. Jatkokehityksessä suositellaan toteuttamaan tarkentavia tutkimuksia erityisesti tutkimattomilta alueilta. Happamien sulfaattimaiden osalta lisätutkimuksia suositellaan neutraloimistarpeen selvittämiseksi.

Massanvaihto on selvityksessä esitetty pääasiallinen ratkaisu alueen pohjanvahvistukseksi, korvaamalla turve ja pehmeät maaperät joko hiekka- tai soramoreenilla tai murskatulla kiviaineksella. Massanvaihtoalueilla matalat maanvaraiset perustukset ovat mahdollisia. Alueilla, joilla odotetaan painumista (kuten kategoriassa III), paaluperustukset ovat todennäköinen ratkaisu, ja kaivannot näillä alueilla vaativat todennäköisesti alueen kuivatusta.

Lisätutkimuksia tarvitaan, jotta voidaan selvittää maamassojen uudelleenkäyttöpotentiaalia koko alueella. Kaivettuja maita, kuten pintahumusta, turvetta, savea ja silttiä, voidaan mahdollisesti käyttää maisemointiin.

Selvitysalueen tuleva kehitys ja rakenteiden suunnittelu vaativat kohdekohtaisia pohjatutkimuksia.

Liite A

AK Rakennettavuuskartta

Suunnittelualue

Rakennettavuuskategoriat

I

Kategoria I

Rakennukset voidaan perustaa maanvaraisesti. Ohut massanvaihto tai esikuormitus voi olla tarpeen.

Tiet ja piha-alueet voidaan rakentaa pohjamaan varaan pinnan turvekerroksen poiston jälkeen.

Putki- ja johtokaivannot voidaan perustaa maanvaraisesti.

Yli 2 m syvistä kaivannoista on tehtävä erillinen kaivantosuunnitelma. Matalammat kaivannot voidaan toteuttaa luiskattuina. Kaivantoluiskat tehdään 2:1 kaltevuuteen tai loivemmin.

II

Kategoria II

Rakennukset voidaan perustaa maanvaraisesti 1-3 m syvän massanvaihdon avulla. Esikuormitus voi olla vaihtoehto paaluperustuksille tai massanvaihdolle. Raskaat rakennukset voivat vaatia paaluperustuksia.

Tiet ja piha-alueet voidaan rakentaa maanvaraisesti. Massanvaihto voi olla tarpeellinen.

Putki- ja johtokaivannot voidaan perustaa maanvaraisesti.

Yli 2 m syvistä kaivannoista on tehtävä erillinen kaivantosuunnitelma. Matalammat kaivannot voidaan toteuttaa luiskattuina. Kaivantoluiskat tehdään 1:1 kaltevuuteen tai loivemmin.

III

Kategoria III

Kategoria III -alueilla painumaa voi esiintyä todennäköisemmin kuin muissa kategorioissa, koska alueella on paljon pehmeikköjä. Painuman suuruutta voidaan arvioida lisätutkimusten avulla jatkosuunnittelussa.

Rakennukset perustetaan paaluperustuksin. 1-4 metrin syvyisille pehmeikköalueille kevyet rakennukset voidaan paaluperustusten sijaan perustaa massanvaihdon varaisesti. Rakennustöiden aikainen kuivatus on tarpeellista.

Tiet ja pihat voidaan perustaa massanvaihdon, syvästabiloinnin tai kevennysrakenteen ja geotekstiilien avulla. Alueen kuivatus on tarpeellista.

Putki- ja johtokaivannot voidaan perustaa maanvaraisesti tai paalulaatoille maaperän olosuhteitten mukaan. Voidaan tarvita pohjanvahvistuksia, kuten syvä- tai massastabilointia, kevennysrakenteita tai massanvaihtoa. Kuivatus rakennustöiden aikana on tarpeellista.

Yli 2 m syvistä kaivannoista on tehtävä erillinen kaivantosuunnitelma. Matalammat kaivannot voidaan toteuttaa luiskattuina. Kaivantoluiskat tehdään 1:2 kaltevuuteen tai loivemmin. Kaivantojen työnaikainen kuivanapito pumppaamalla on todennäköisesti tarpeellista.

Kairaukset

- PO Porakonekairaus
- PA Painokairaus
- HP Puristinheijarikairaus
- SI Siipikairaus

Näytteenotto

- NO Maanäytteet, näytteenottoluokat C-E

Muut tutkimukset

- KO Koekuoppa
- VP Pohjavedenpinnan havaintoputki
- VO Orsivedenpinnan havaintoputki

Esimerkki esitystavasta

Tutkimuksen tunnusnumero
Kallionpinnan syvyys
Porauksen päättymissyvyys

GW 71.95...+71.95 (71.95)
16.12.2024 - 16.12.2024
H33 +71.15
29.40 +41.75 Ka
32.60 +38.55

Pohjaveden pinta pohjavesiputkessa
Maanpinnan korkeustaso
Kallionpinnan korkeustaso
Porauksen päättymistaso

Meters
0 100 250 500

REV.	LUKUMÄÄRÄ	MUUTOS	SUUNN.	TARK.	dd/mm/yy PVM

Kaup.osa/Kylä / Kortteli/Tila / Tontti/Rno	Viranomaisen merkintöjä
Pysyvä rakennustunnus	Korkeus- ja koord. järjestelmä: ETRS-TM35FIN / N2000
Rakennustoimenpide	Piirustuslaji: POHJATUTKIMUS; No
Rakennuskohteen nimi ja osoite: Hervan asemakaava; Kärppäsuontie ja Turhapurontie; 91150 Ii	Piirustuksen sisältö: Rakennettavuuskartta; Mittakaava: 1:5000
SITOWISE, Länsiväylä 4, 40630 Jyväskylä, 020 747 6000, www.sitowise.com	Suunn.ala: GEO; Työnumero; Piir.no; Muutos
Piirtäjä: Matias Sosunoff; Suunnittelija: Matias Sosunoff	Tiedosto
Tarkastaja: Hannu Kemppainen; Vast.suun/Hyväksyjä: Hannu Kemppainen	Päiväys: 2.4.2026

Liite B

GI Factual Report

SITOWISE

Factual Report – Ground Investigations

Herva Site

Reference: HAU-IDD-G-REP-0001

Date	**30.4.2025**
Author	**Laura Markkanen**
Reviewer	**Hannu Kemppainen**
Approver	**Hannu Kemppainen**
Project number	**12009429**

Factual Report - Ground Investigations

Taratest Oy has carried out soil investigations on the site between 11/2024 and 4/2025. The results and data of the soil investigations have been submitted in pdf and tek (Inframodel) file format.

Sitowise Oy has prepared ground investigation maps and sections of the results, as well as borehole diagram and survey drawings for each investigation point. The plots for a point produced by Sitowise are a duplication of the factual data presented by Taratest. The ground elevation data shown in the sections is based on LiDAR measurements from open public data.

All results and data are presented in this report in accordance with the tables below (Table 1 and Table 2).

Table 1. Documents produced by Sitowise Oy

Document	Page	Date	Author
GI maps:			
Ground Investigation	1	28.4.2025	Hannu Kemppainen, Laura Markkanen
Ground Investigation, Numbers of the GI points	2	28.4.2025	Hannu Kemppainen, Laura Markkanen
Ground Investigation, Depth of groundwater	3	28.4.2025	Hannu Kemppainen, Laura Markkanen
Ground Investigation, Mapping	4	29.4.2025	Hannu Kemppainen, Laura Markkanen
Sections:			
Section S01-S01	5	11.2.2025	Hannu Kemppainen, Laura Markkanen
Section S02-S02	6	28.4.2025	Hannu Kemppainen, Laura Markkanen
Section S03-S03	7	28.4.2025	Hannu Kemppainen, Laura Markkanen
Section S04-S04	8	11.2.2025	Hannu Kemppainen, Laura Markkanen
Section S05-S05	9	28.4.2025	Hannu Kemppainen, Laura Markkanen
Section S06-S06	10	28.4.2025	Hannu Kemppainen, Laura Markkanen
Section S07-S07	11	28.4.2025	Hannu Kemppainen, Laura Markkanen
Section S08-S08	12	28.4.2025	Hannu Kemppainen, Laura Markkanen
Section S09-S09	13	6.3.2025	Hannu Kemppainen, Laura Markkanen
Section S10-S10	14	31.3.2025	Hannu Kemppainen, Laura Markkanen
Section S11-S11	15	11.2.2025	Hannu Kemppainen, Laura Markkanen
Section S12-S12	16	28.4.2025	Hannu Kemppainen, Laura Markkanen
Section S13-S13	17	22.4.2025	Hannu Kemppainen, Laura Markkanen
Section S14-S14	18	28.4.2025	Hannu Kemppainen, Laura Markkanen
Section S15-S15	19	28.4.2025	Hannu Kemppainen, Laura Markkanen
Section S16-S16	20	28.4.2025	Hannu Kemppainen, Laura Markkanen
Section S17-S17	21	28.4.2025	Hannu Kemppainen, Laura Markkanen

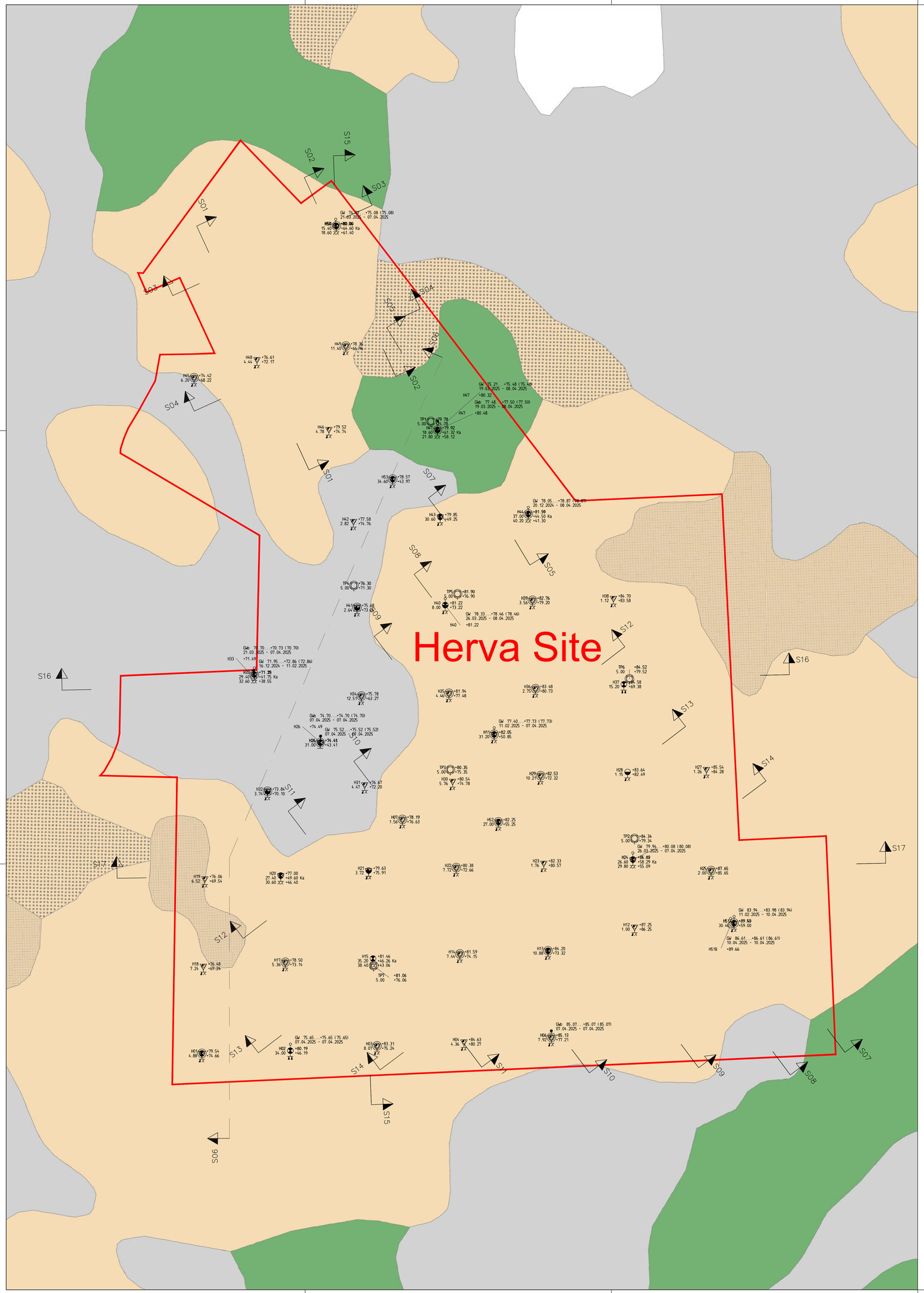
Soundings:			
H01	22	7.2.2025	Hannu Kemppainen, Laura Markkanen
H02	23	22.4.2025	Hannu Kemppainen, Laura Markkanen
H03	24	7.2.2025	Hannu Kemppainen, Laura Markkanen
H04	25	7.2.2025	Hannu Kemppainen, Laura Markkanen
H06	26	22.4.2025	Hannu Kemppainen, Laura Markkanen
H07	27	6.3.2025	Hannu Kemppainen, Laura Markkanen
H11	28	28.4.2025	Hannu Kemppainen, Laura Markkanen
H12	29	7.2.2025	Hannu Kemppainen, Laura Markkanen
H13	30	7.2.2025	Hannu Kemppainen, Laura Markkanen
H14	31	7.2.2025	Hannu Kemppainen, Laura Markkanen
H15	32	7.2.2025	Hannu Kemppainen, Laura Markkanen
H17	33	7.2.2025	Hannu Kemppainen, Laura Markkanen
H18	34	7.2.2025	Hannu Kemppainen, Laura Markkanen
H19	35	7.2.2025	Hannu Kemppainen, Laura Markkanen
H20	36	7.2.2025	Hannu Kemppainen, Laura Markkanen
H21	37	7.2.2025	Hannu Kemppainen, Laura Markkanen
H22	38	6.3.2025	Hannu Kemppainen, Laura Markkanen
H23	39	7.2.2025	Hannu Kemppainen, Laura Markkanen
H24	40	28.4.2025	Hannu Kemppainen, Laura Markkanen
H25	41	7.2.2025	Hannu Kemppainen, Laura Markkanen
H26	42	22.4.2025	Hannu Kemppainen, Laura Markkanen
H27	43	7.2.2025	Hannu Kemppainen, Laura Markkanen
H28	44	7.2.2025	Hannu Kemppainen, Laura Markkanen
H29	45	7.2.2025	Hannu Kemppainen, Laura Markkanen
H30	46	7.2.2025	Hannu Kemppainen, Laura Markkanen
H31	47	7.2.2025	Hannu Kemppainen, Laura Markkanen
H32	48	7.2.2025	Hannu Kemppainen, Laura Markkanen
H33	49	28.4.2025	Hannu Kemppainen, Laura Markkanen
H34	50	6.3.2025	Hannu Kemppainen, Laura Markkanen
H35	51	7.2.2025	Hannu Kemppainen, Laura Markkanen
H36	52	7.2.2025	Hannu Kemppainen, Laura Markkanen
H37	53	7.2.2025	Hannu Kemppainen, Laura Markkanen
H38	54	7.2.2025	Hannu Kemppainen, Laura Markkanen
H39	55	7.2.2025	Hannu Kemppainen, Laura Markkanen
H40	56	28.4.2025	Hannu Kemppainen, Laura Markkanen
H41	57	7.2.2025	Hannu Kemppainen, Laura Markkanen
H42	58	7.2.2026	Hannu Kemppainen, Laura Markkanen
H43	59	7.2.2025	Hannu Kemppainen, Laura Markkanen
H44	60	28.4.2025	Hannu Kemppainen, Laura Markkanen

H45	61	7.2.2025	Hannu Kemppainen, Laura Markkanen
H46	62	7.2.2025	Hannu Kemppainen, Laura Markkanen
H47	63	28.4.2025	Hannu Kemppainen, Laura Markkanen
H48	64	7.2.2025	Hannu Kemppainen, Laura Markkanen
H49	65	7.2.2025	Hannu Kemppainen, Laura Markkanen
H50	66	28.4.2025	Hannu Kemppainen, Laura Markkanen
H51	67	28.4.2025	Hannu Kemppainen, Laura Markkanen
H52	68	6.5.2025	Hannu Kemppainen, Laura Markkanen
H53	69	6.3.2025	Hannu Kemppainen, Laura Markkanen
TP1	70	7.2.2025	Hannu Kemppainen, Laura Markkanen
TP2	71	7.2.2025	Hannu Kemppainen, Laura Markkanen
TP3	72	7.2.2025	Hannu Kemppainen, Laura Markkanen
TP4	73	7.2.2025	Hannu Kemppainen, Laura Markkanen
TP5	74	7.2.2025	Hannu Kemppainen, Laura Markkanen
TP6	75	7.2.2025	Hannu Kemppainen, Laura Markkanen
TP7	76	7.2.2025	Hannu Kemppainen, Laura Markkanen

Table 2. Documents produced by Taratest Oy

Document	Page	Date	Author
Geological mapping, Hauki Site	77	5.12.2024	Otso Sattilainen
Trial pit sampling report TP1	102	20.11.2024	Otso Sattilainen
Trial pit sampling report TP2	103	20.11.2024	Otso Sattilainen
Trial pit sampling report TP3	104	19.11.2024	Otso Sattilainen
Trial pit sampling report TP4	105	19.11.2024	Otso Sattilainen
Trial pit sampling report TP5	106	19.11.2024	Otso Sattilainen
Trial pit sampling report TP6	107	20.11.2024	Otso Sattilainen
Trial pit sampling report TP7	108	21.11.2024	Otso Sattilainen
Groundwater standpipe card (H02)	109	7.4.2025	Kalle Sihvo
Groundwater standpipe card (H06)	110	7.4.2025	Kalle Sihvo
Groundwater standpipe card (H11)	111	7.4.2025	Kalle Sihvo
Groundwater standpipe card (H24)	112	7.4.2025	Kalle Sihvo
Groundwater standpipe card (H26)	113	7.4.2025	Kalle Sihvo
Groundwater standpipe card (H26 perched water)	114	7.4.2025	Kalle Sihvo
Groundwater standpipe card (H33)	115	11.2.2025	Kalle Sihvo
Groundwater standpipe card (H33 perched water)	116	7.4.2025	Kalle Sihvo
Groundwater standpipe card (H40)	117	8.4.2025	Kalle Sihvo
Groundwater standpipe card (H44)	118	8.4.2025	Kalle Sihvo

Groundwater standpipe card (H47)	119	8.4.2025	Kalle Sihvo
Groundwater standpipe card (H47 perched water)	120	8.4.2025	Kalle Sihvo
Groundwater standpipe card (H50)	121	7.4.2025	Kalle Sihvo
Groundwater standpipe card (H51)	122	10.4.2025	Kalle Sihvo
Groundwater standpipe card (H51B)	123	10.4.2025	Kalle Sihvo
Test Report Soil Samples	124	11/2024-02/2025	Tomi Sahlman
Analyysiraportti HL2406729 (H47)	212	7.1.2025	Jani Sjölund
Analyysiraportti HL2501221 (H12)	217	3.4.2025	Jani Sjölund
Proctor test results (TP01)	221	8.1.2025	Maria Penttilä
Proctor test results (TP02)	223	24.1.2025	Maria Penttilä
Proctor test results (TP03)	225	21.1.2025	Maria Penttilä
Proctor test results (TP04)	227	21.1.2025	Maria Penttilä
Proctor test results (TP05)	231	17.1.2025	Maria Penttilä
Proctor test results (TP06)	233	15.1.2025	Maria Penttilä
Proctor test results (TP07)	235	14.1.2025	Maria Penttilä
Proctor test result table	237		



KAIRAUSOHJELMA Ground Investigation				Päiväys: 17.04.2025		Sivu 1/2	
Projekti: Project Hauki – Herva Site				Työnimi:			
Tilaaja: Client				Koord. järj.: ETRS-TM35FIN			
Tekijä: Laura Markkanen				☒ Porakonek. kallion varmistus [3m]			
Lisätietoja:							
Piste-tunnus	Tutkimus-tapa	X	Y	Linja	Paalu	Sivu-mitta	Huom.
H01	HP PO NO	7263100.75	438022.01				
H02	PO VP	7263109.94	438325.20				
H03	HP NO	7263126.22	438622.24				
H04	HP	7263140.66	438920.25				
H06	HP NO VO	7263155.50	439219.56				
H07	HP NO	7263902.51	438709.29				
H11	HP PO NO VP	7264193.99	439023.72				
H12	HP	7263534.11	439504.88				
H13	HP PO NO	7263452.22	439208.31				
H14	HP NO	7263441.15	438906.16				
H15	PO	7263425.81	438608.37				
H17	HP NO	7263413.00	438307.84				
H18	HP	7263399.67	438027.05				
H19	HP	7263699.38	438032.35				
H20	HP PO	7263710.12	438292.39				
H21	HP PA	7263721.71	438593.45				
H22	HP NO	7263737.34	438893.64				
H23	HP	7263752.94	439193.91				
H24	HP PO VP	7263764.94	439499.33				
H25	HP NO	7263727.03	439767.13				
H26	HP PO NO VO VP	7264165.76	438427.54				
H27	HP	7264074.16	439751.32				
H28	PA	7264064.87	439481.05				
H29	HP NO	7264052.11	439182.88				
H30	HP	7264033.50	438881.38				
H31	HP	7264021.80	438580.21				
H32	HP PA SI NO	7263998.70	438247.11				
H33	HP PO NO VP VO	7264399.06	438201.54				
H34	HP NO	7264325.16	438568.55				
H35	HP NO	7264334.52	438868.90				
H36	HP NO	7264350.41	439165.09				
H37	PO	7264365.61	439468.24				
H38	HP	7264660.72	439432.87				
H39	HP NO	7264653.41	439154.99				
H40	PA PO VP	7264636.91	438856.00				

KAIRAUSOHJELMA Ground Investigation				Päiväys: 17.04.2025		Sivu 2/2	
Projekti: Project Hauki – Herva Site				Työnimi:			
Tilaaja: Client				Koord. järj.: ETRS-TM35FIN			
Tekijä: Laura Markkanen				☒ Porakonek. kallion varmistus [3m]			
Lisätietoja:							
Piste-tunnus	Tutkimus-tapa	X	Y	Linja	Paalu	Sivu-mitta	Huom.
H41	HP PA SI NO	7264628.26	438553.77				
H42	HP	7264924.30	438541.74				
H43	HP PO	7264939.47	438838.70				
H44	HP PO NO VP	7264949.34	439140.75				
H45	HP NO	7265416.12	437995.30				
H46	HP	7265239.86	438457.33				
H47	HP PA PO NO VP VO	7265237.09	438829.37				
H48	HP	7265478.83	438210.91				
H49	HP NO	7265524.81	438515.52				
H50	HP PO NO VP	7265936.53	438482.70				
H51	HP PO NO VP	7263547.04	439845.71				
H52	HP PO NO	7263893.96	439038.33				
H53	HP PO NO	7265068.86	438675.89				
TP1	KO NO	7265266.46	438806.43				
TP2	KO NO	7263837.24	439504.67				
TP3	KO NO	7264073.14	438873.38				
TP4	KO NO	7264704.06	438542.84				
TP5	KO NO	7264675.46	438898.20				
TP6	KO NO	7264384.11	439487.42				
TP7	KO NO	7263401.17	438610.48				

YHTEENSÄ	
6	PA - Painokairaus
2	SI - Siipikairaus
7	KO - Koekuoppa
43	HP - Puristin-heijari-kairaus
18	PO - Porakonekairaus
34	NO - Näytteenotto hairitty
10	VP - Pohjaveden mittausputki
4	VO - Orsiveden mittausputki

LEGEND

Soundings

- Percussion drilling with rods
- Light penetrometer sounding
- Static-dynamic penetration test
- Weight sounding test
- Vane test

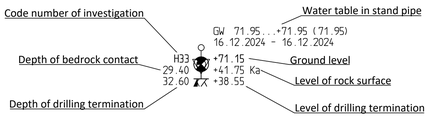
Other investigations

- Disturbed samples
- Standpipe for groundwater table

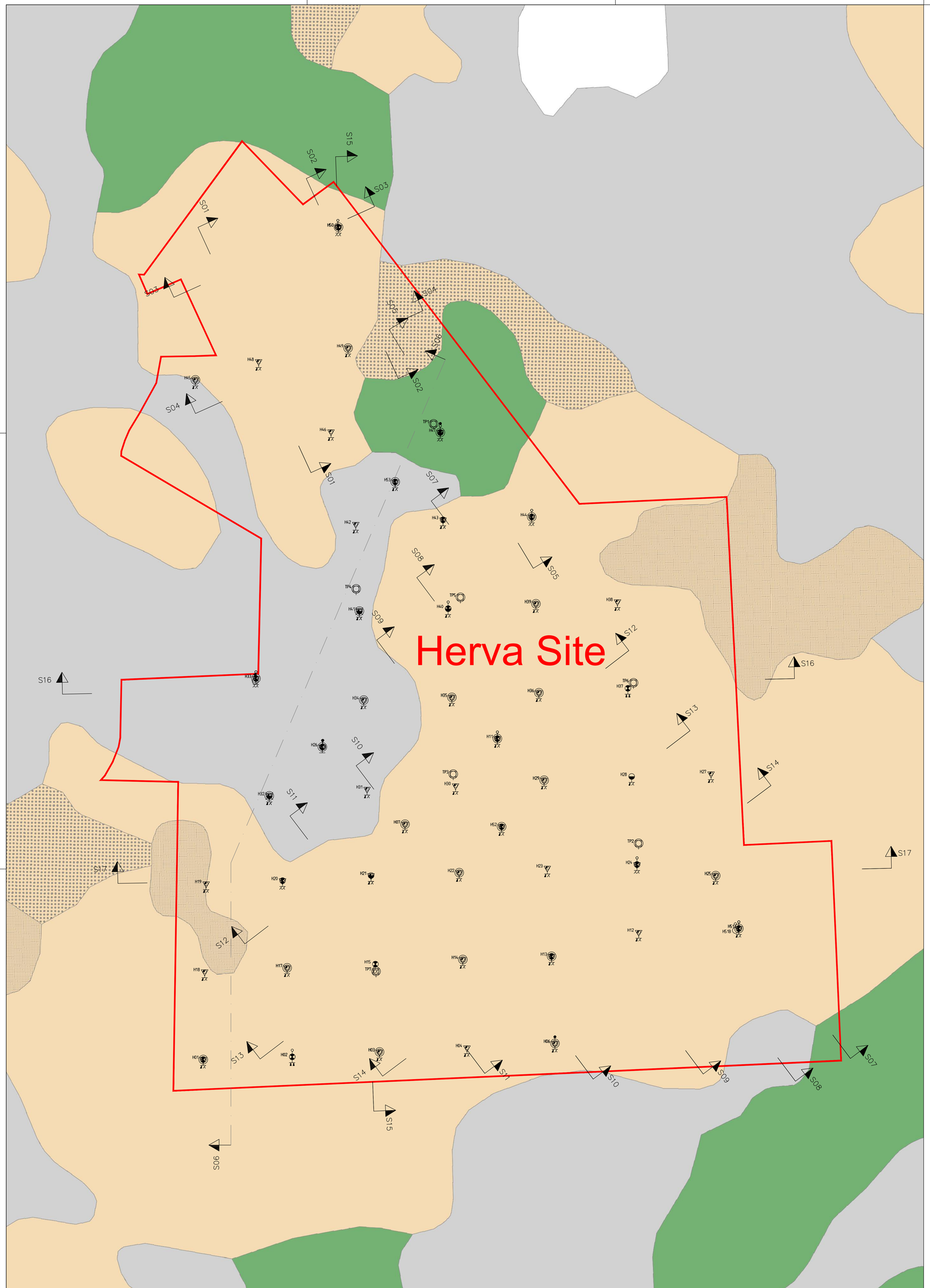
Termination of soundings

- Sounding terminated at the given depth
- Sounding terminated at dense soil layer
- Sounding terminated at an estimated cobble or boulder
- Sounding terminated with wedging between stones and boulders
- Sounding terminated at cobble, boulder or bedrock contact
- Sounding terminated at bedrock contact, verified rock

Example of presentation



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Ground investigations — Scale: 1:5000
SITOWISE Ilmoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No.: 12009429 — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 28.4.2025 — File



KAIRAUSOHJELMA Ground Investigation					Päiväys: 17.04.2025	Sivu 1/2
Projekti: Project Hauki – Herva Site					Työnimi:	
Tilaaja: Client					Koord. järj.: ETRS-TM35FIN	
Tekijä: Laura Markkanen					☒ Porakonek. kallion varmistus [3m]	
Lisätietoja:						
Piste-tunnus	Tutkimus-tapa	X	Y	Linja	Paalu	Sivu-mitta	Huom.
H01	HP PO NO	7263100.75	438022.01				
H02	PO VP	7263109.94	438325.20				
H03	HP NO	7263126.22	438622.24				
H04	HP	7263140.66	438920.25				
H06	HP NO VO	7263155.50	439219.56				
H07	HP NO	7263902.51	438709.29				
H11	HP PO NO VP	7264193.99	439023.72				
H12	HP	7263534.11	439504.88				
H13	HP PO NO	7263452.22	439208.31				
H14	HP NO	7263441.15	438906.16				
H15	PO	7263425.81	438608.37				
H17	HP NO	7263413.00	438307.84				
H18	HP	7263399.67	438027.05				
H19	HP	7263699.38	438032.35				
H20	HP PO	7263710.12	438292.39				
H21	HP PA	7263721.71	438593.45				
H22	HP NO	7263737.34	438893.64				
H23	HP	7263752.94	439193.91				
H24	HP PO VP	7263764.94	439499.33				
H25	HP NO	7263727.03	439767.13				
H26	HP PO NO VO VP	7264165.76	438427.54				
H27	HP	7264074.16	439751.32				
H28	PA	7264064.87	439481.05				
H29	HP NO	7264052.11	439182.88				
H30	HP	7264033.50	438881.38				
H31	HP	7264021.80	438580.21				
H32	HP PA SI NO	7263998.70	438247.11				
H33	HP PO NO VP VO	7264399.06	438201.54				
H34	HP NO	7264325.16	438568.55				
H35	HP NO	7264334.52	438868.90				
H36	HP NO	7264350.41	439165.09				
H37	PO	7264365.61	439468.24				
H38	HP	7264660.72	439432.87				
H39	HP NO	7264653.41	439154.99				
H40	PA PO VP	7264636.91	438856.00				

KAIRAUSOHJELMA Ground Investigation					Päiväys: 17.04.2025	Sivu 2/2
Projekti: Project Hauki – Herva Site					Työnimi:	
Tilaaja: Client					Koord. järj.: ETRS-TM35FIN	
Tekijä: Laura Markkanen					☒ Porakonek. kallion varmistus [3m]	
Lisätietoja:						
Piste-tunnus	Tutkimus-tapa	X	Y	Linja	Paalu	Sivu-mitta	Huom.
H41	HP PA SI NO	7264628.26	438553.77				
H42	HP	7264924.30	438541.74				
H43	HP PO	7264939.47	438838.70				
H44	HP PO NO VP	7264949.34	439140.75				
H45	HP NO	7265416.12	437995.30				
H46	HP	7265239.86	438457.33				
H47	HP PA PO NO VP VO	7265237.09	438829.37				
H48	HP	7265478.83	438210.91				
H49	HP NO	7265524.81	438515.52				
H50	HP PO NO VP	7265936.53	438482.70				
H51	HP PO NO VP	7263547.04	439845.71				
H52	HP PO NO	7263893.96	439038.33				
H53	HP PO NO	7265068.86	438675.89				
TP1	KO NO	7265266.46	438806.43				
TP2	KO NO	7263837.24	439504.67				
TP3	KO NO	7264073.14	438873.38				
TP4	KO NO	7264704.06	438542.84				
TP5	KO NO	7264675.46	438898.20				
TP6	KO NO	7264384.11	439487.42				
TP7	KO NO	7263401.17	438610.48				
YHTEENSÄ							
6	PA - Painokairaus						
2	SI - Siipikairaus						
7	KO - Koekuoppa						
43	HP - Puristin-heijari-kairaus						
18	PO - Porakonekairaus						
34	NO - Näytteenotto häiritty						
10	VP - Pohjaveden mittausputki						
4	VO - Orsiveden mittausputki						

LEGEND

Soundings

- Percussion drilling with rods
- Light penetrometer sounding
- Static-dynamic penetration test
- Weight sounding test
- Vane test

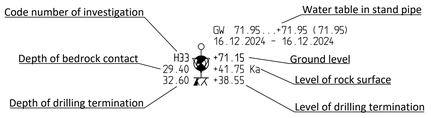
Other investigations

- Disturbed samples
- Standpipe for groundwater table

Termination of soundings

- Sounding terminated at the given depth
- Sounding terminated at dense soil layer
- Sounding terminated at an estimated cobble or boulder
- Sounding terminated with wedging between stones and boulders
- Sounding terminated at cobble, boulder or bedrock contact
- Sounding terminated at bedrock contact, verified rock

Example of presentation



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Ground Investigations Numbers of the GI points — Scale: 1:5000
SITOWISE — Linnoitustie 6, 02600 Espoo, 020 747 6000, www.sitowise.com			Category: GEO — Project No.: 12009429 — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 28.4.2025 — File

LEGEND

Soundings

- Percussion drilling with rods
- Light penetrometer sounding
- Static-dynamic penetration test
- Weight sounding test
- Vane test

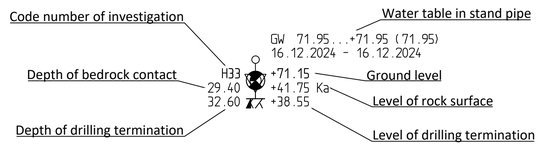
Other investigations

- Disturbed samples
- Standpipe for groundwater table

Termination of soundings

- Sounding terminated at the given depth
- Sounding terminated at dense soil layer
- Sounding terminated at an estimated cobble or boulder
- Sounding terminated with wedging between stones and boulders
- Sounding terminated at cobble, boulder or bedrock contact
- Sounding terminated at bedrock contact, verified rock

Example of presentation



Herva Site

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing contents: Depth of groundwater — Scale: 1:5000
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No.: 12009429 — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 28.4.2025 — File

LEGEND

- Building
- Culvert
- Other structure

Soundings

- Percussion drilling with rods
- Light penetrometer sounding
- Static-dynamic penetration test
- Weight sounding test
- Vane test

Other investigations

- Disturbed samples
- Standpipe for groundwater table

Termination of soundings

- Sounding terminated at the given depth
- Sounding terminated at dense soil layer
- Sounding terminated at an estimated cobble or boulder
- Sounding terminated with wedging between stones and boulders
- Sounding terminated at cobble, boulder or bedrock contact
- Sounding terminated at bedrock contact, verified rock

Example of presentation

Code number of investigation

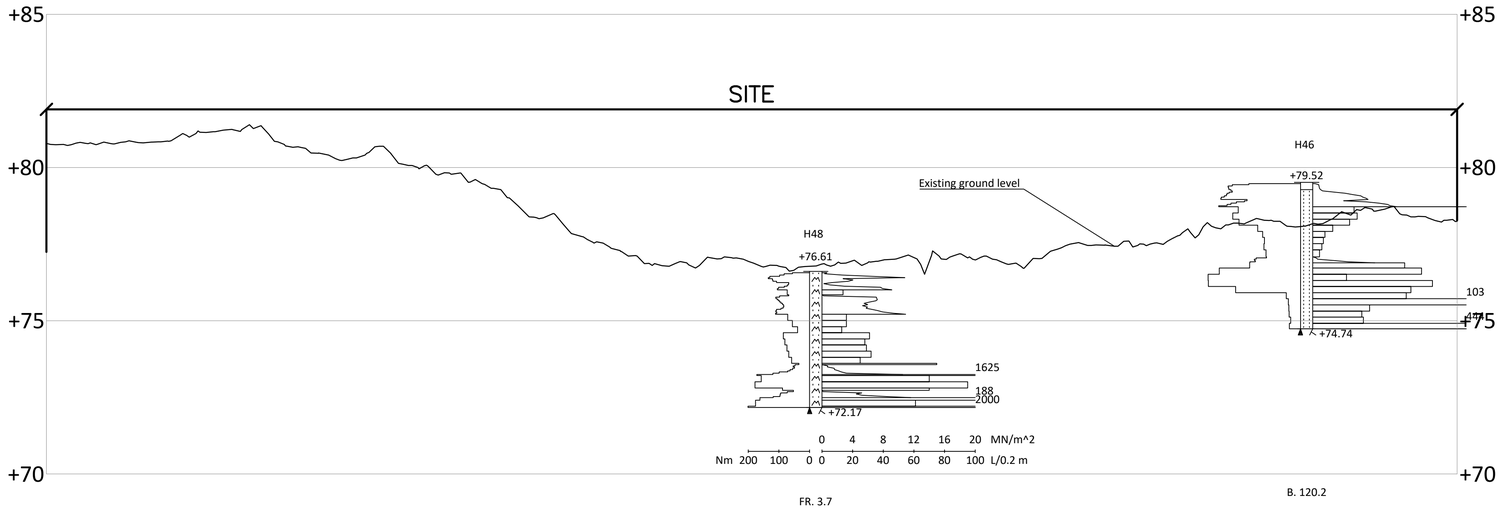
H33

Herva Site

0m 50m 250m 500m

District / Block / Lot:	Authority identification
Building no.	Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action	Drawing identification: GROUND INVESTIGATION / Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii	Drawing contents: Ground Investigations, Mapping / Scale: 1:5000
SITOWISE Linnoitustie 6, 02600 Espoo, 020 747 6000, www.sitowise.com	Category: GEO / Project No.: 12009429 / Doc.No. / Rev.
Developed by / Checked by	File location
Drafted by: Laura Markkanen / Approved by: Hannu Kemppainen	Date: 29.4.2025 / File

Section S01 - S01
1:2000 / 1:100

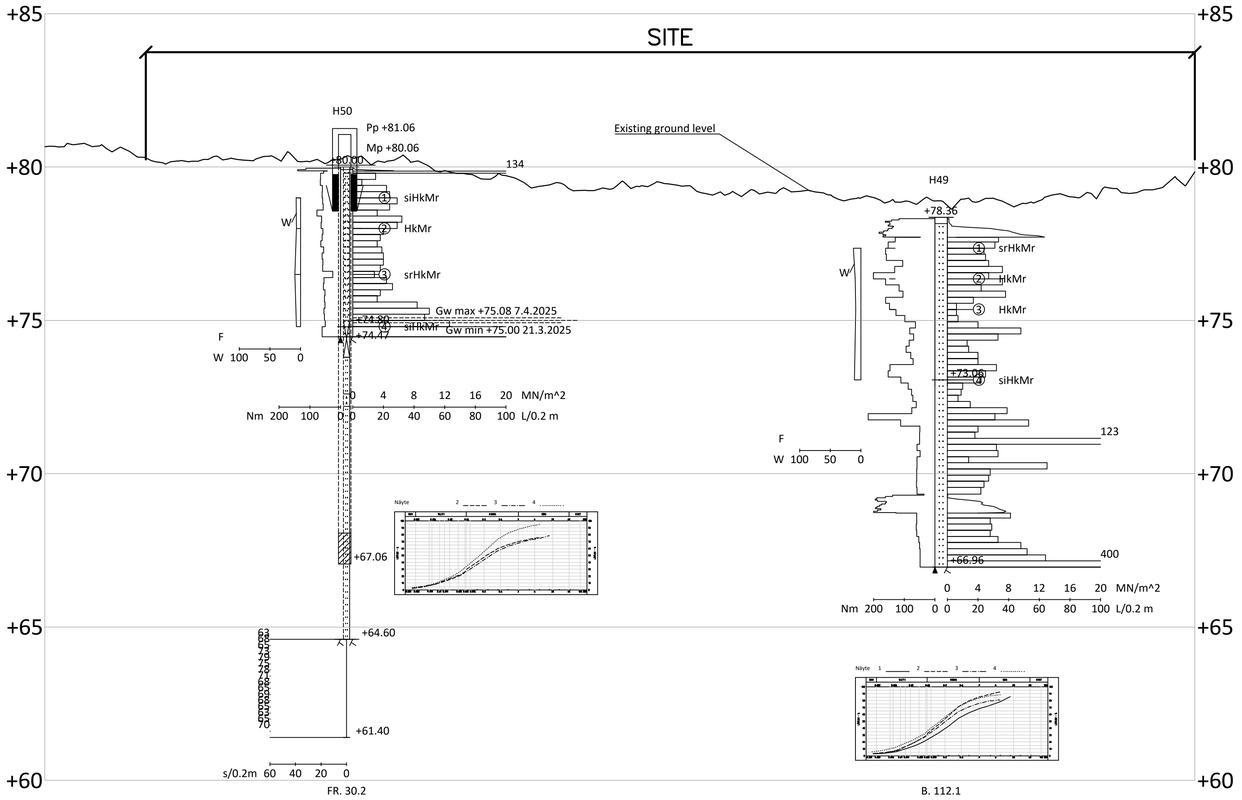


LEGEND

Existing ground level based on LiDAR

District / Block / Loc	Authority identification
Building no.	Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action	Drawing identification: GROUND INVESTIGATION / Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii	Drawing content: Section S01 - S01 / Scale: 1:2000, 1:100
SITOWISE Limnéantie 6, 02600 Espoo, 020 747 6000, www.sitowise.com	Category: GEO / Project No. / Doc.No. / Rev.
Developed by / Checked by	File location
Drafted by: Laura Markkanen / Approved by: Hannu Kemppainen	Date: 11.2.2025 / File

Section S02 - S02
1:2000 / 1:100



LEGEND

Existing ground level based on LiDAR

District	Block	Lot
Building no.		
Building action		
Building project and address		
Project Hauki, Herva Site		
65°29'32"N 25°41'01"E		
Kärppäsuontie / Turhapurontie		
91150 Ii		
SITOWISE	Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com	
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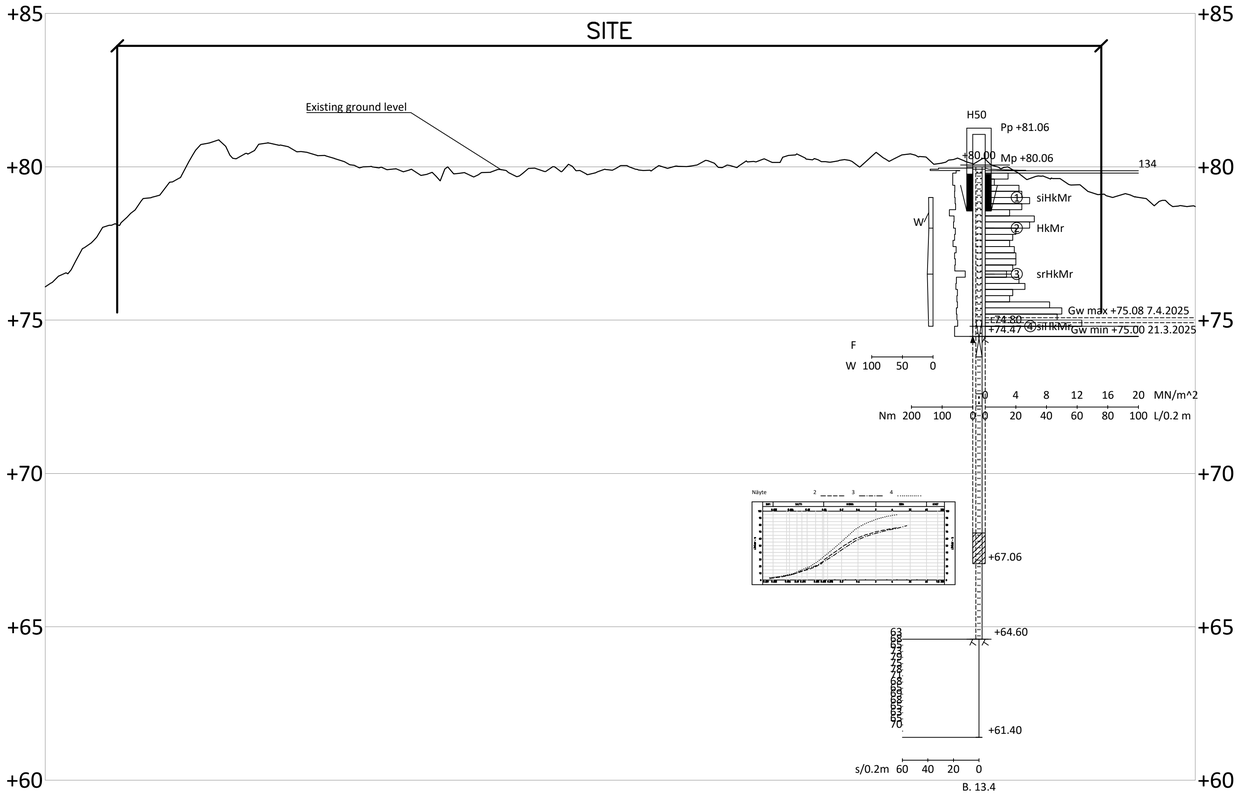
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	

Authority identification	
Co-ordinate/Height system	ETRS-TM35FIN / N2000
Drawing identification	Consecutive no.
GROUND INVESTIGATION	
Drawing content	Scale
Section S02 - S02	1:2000 1:100
Category: GEO	Project No. / Doc.No. / Rev.
File location	
Date: 28.4.2025	File

Section S03 - S03
1:2000 / 1:100



B. 13.4

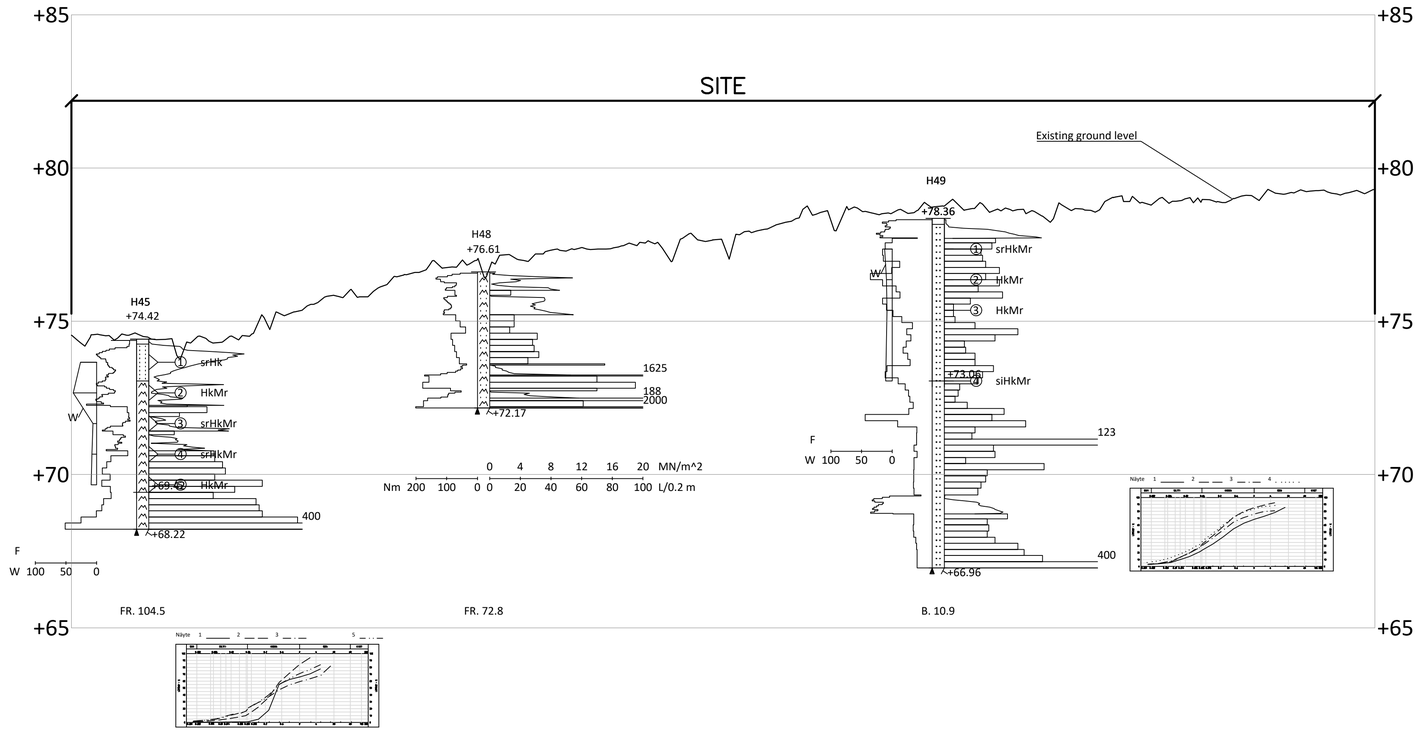
LEGEND

Existing ground level based on LiDAR

District	Block	Lot
Building no.		
Building action		
Building project and address Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii		
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com		
Developed by	Checked by	
Drafted by Laura Markkanen	Approved by Hannu Kemppainen	

Authority identification	
Co-ordinate/Height system ETRS-TM35FIN / N2000	
Drawing identification GROUND INVESTIGATION	Consecutive no.
Drawing contents Section S03 - S03	Scale 1:2000 1:100
Category GEO	Project No. / Doc.No. / Rev.
File location	
Date 28.4.2025	File

Section S04 - S04
1:2000 / 1:100

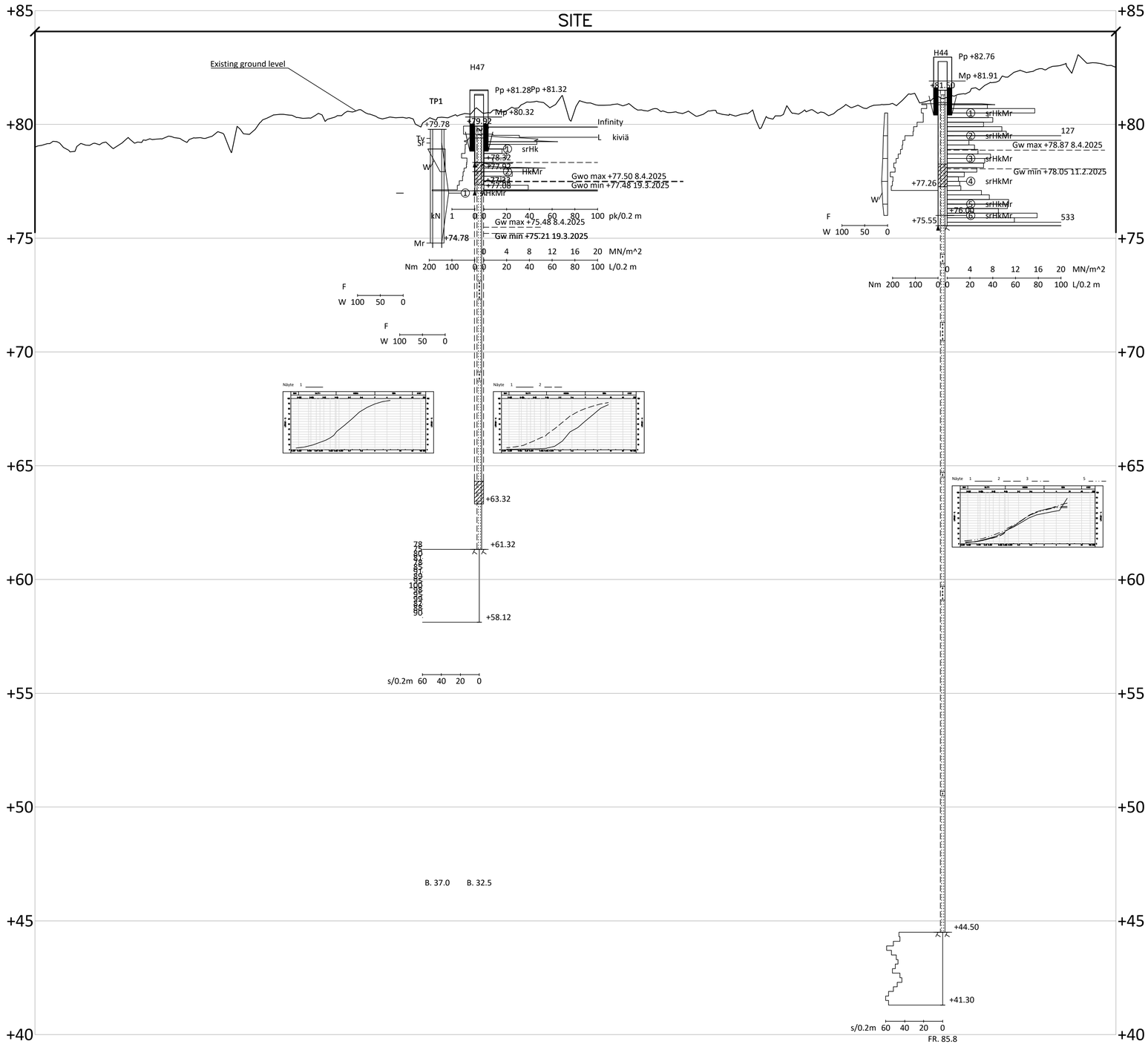


LEGEND

Existing ground level based on LiDAR

District	Block	Loc	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Section S04 - S04; Scale: 1:2000, 1:100
SITOWISE Limnéantie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 11.2.2025; File

Section S05 - S05
1:2000 / 1:100



LEGEND

Existing ground level based on LiDAR

District	Block	Lot
Building no.		
Building action		
Building project and address		
Project Hauki, Herva Site		
65°29'32"N 25°41'01"E		
Kärppäsuontie / Turhapurontie		
91150 Ii		
Developed by	Checked by	
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	

Authority identification

Co-ordinate/Height system: ETRS-TM35FIN / N2000

Drawing identification: GROUND INVESTIGATION

Consecutive no.

Drawing content: Section S05 - S05

Scale: 1:2000 1:100

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02600 Espoo
020 747 6000
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Category: GEO

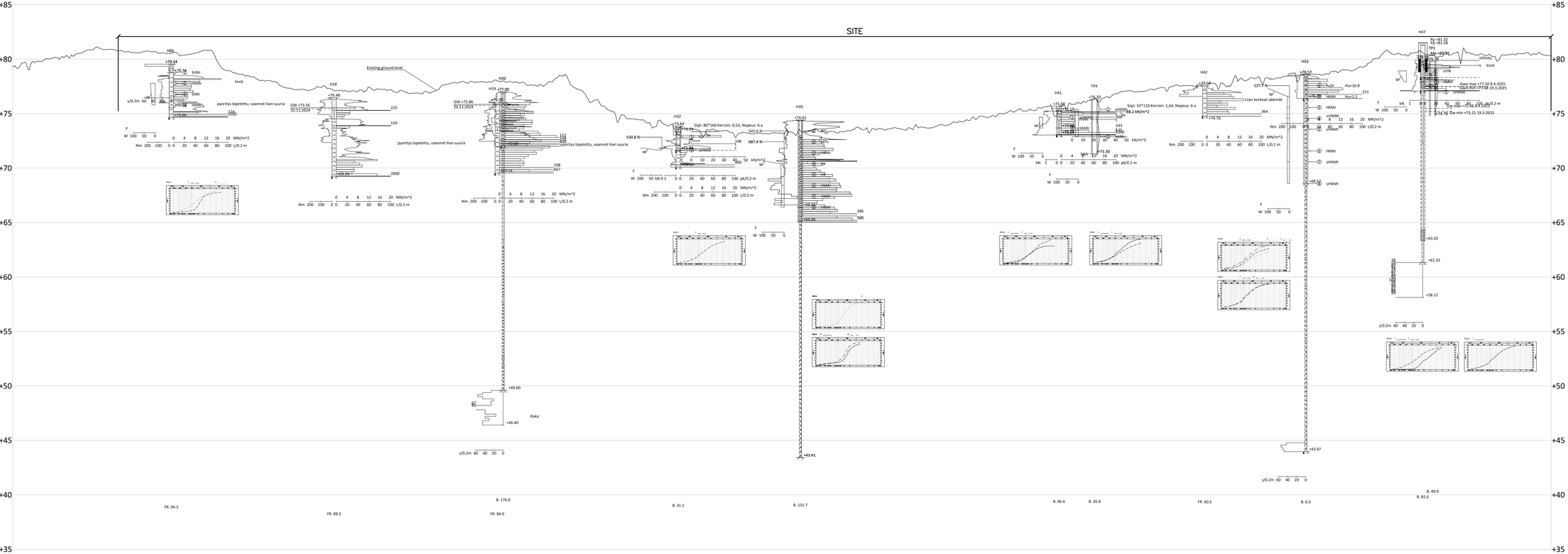
Project No. | Doc.No. | Rev.

File location

Date: 28.4.2025

File

Section S06 - S06
1:2000 / 1:100

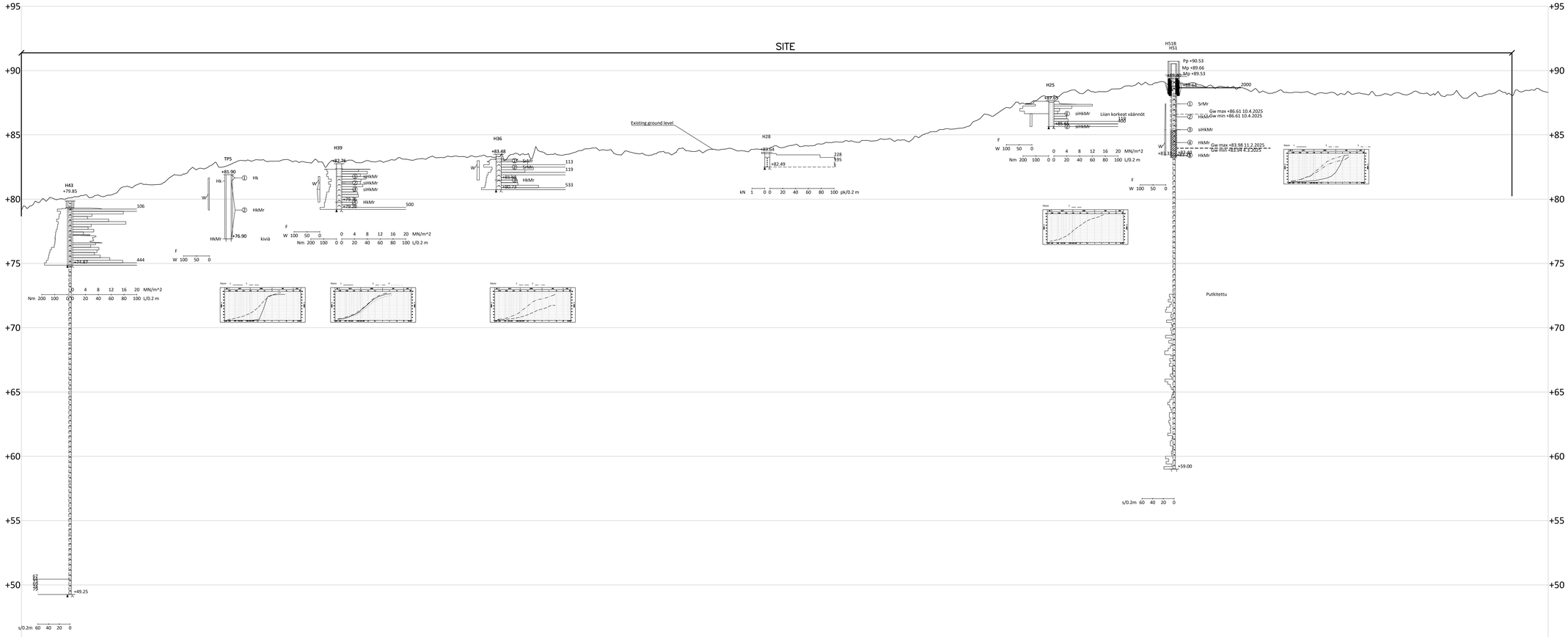


LEGEND

Existing ground level based on LiDAR

District	Block	Lot	Authority identification
Building no.			Co-ordinate/height system EUREF-FIN/TM35FIN / N2000
Building action			Drawing identification GEO/VAC-INVESTIGATION
Building property's or address Project Hauki, Herva Site 65°29'33"N 25°41'01"E Kärppäisuontie / Turhapuronti 91150 Ii			Drawing content Section S06 - S06
			Scale 1:2000 1:100
SITOWISE Linnoitustie 6 02600 Espoo 020 747 600 www.sitowise.com			Category GEO
Coordinates by	Checked by		Doc number
Drafted by Laura Markkanen	Approved by Hannu Ikonpoinen		Date 28.4.2025

Section S07 - S07
1:2000 / 1:100



LEGEND

Existing ground level based on LiDAR

District	Block	Lot
Building no.		
Building section		
Building project and address		
Project Hauki, Herva Site		
Kärppäsuontie / Turhapurontie		
91150 Ii		
Client/Owner by	Checked by	
Drafted by	Approved by	
Laura Markkanen	Hannu Kemppainen	

Authority clarification	
Co-ordinate height system	ETRS-TM35FIN / N2000
Drawing identification	GROUND INVESTIGATION
Drawing content	Section S07 - S07
Consultant no.	
Scale	1:2000 1:100
Category	GEO
Project No.	
Doc No.	
Rev.	
Scale	
File	
Date	28.4.2025

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020-747 6200
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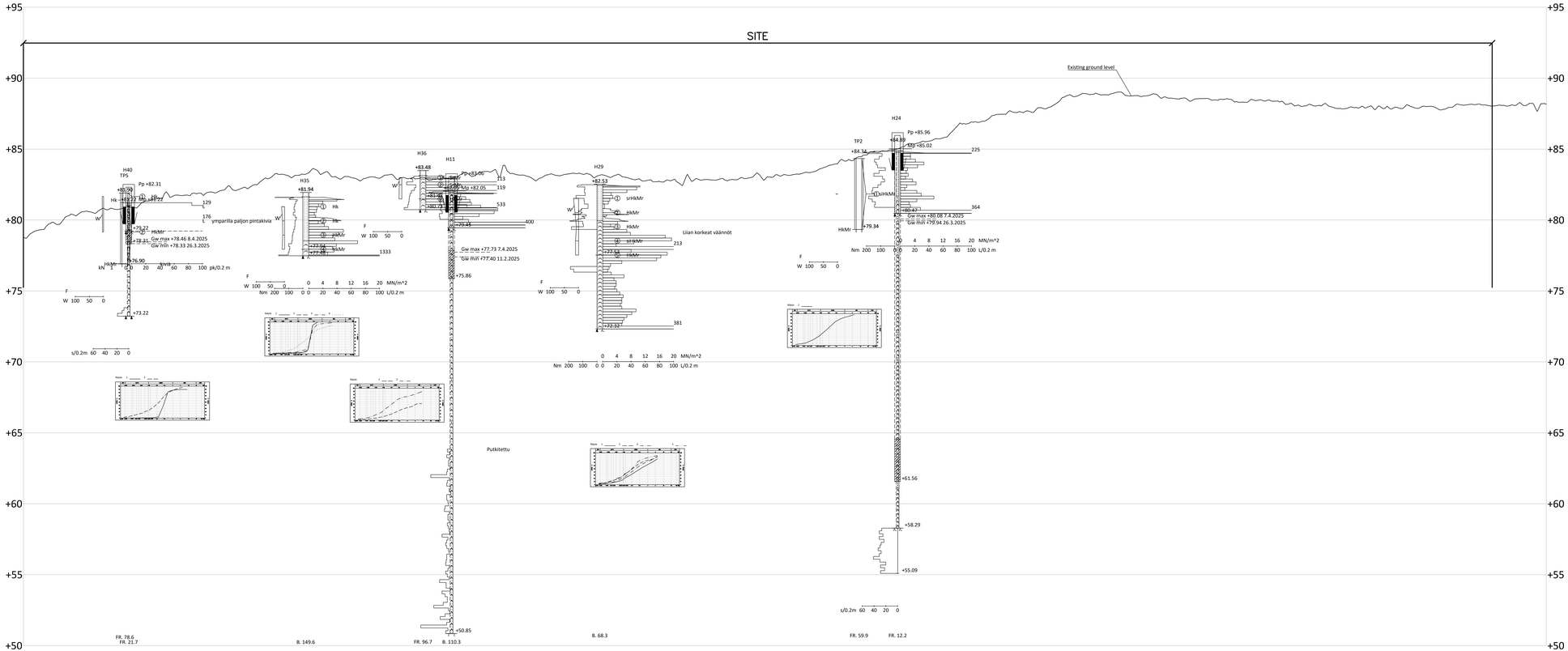
Section S08 - S08
1:2000 / 1:100



LEGEND

Existing ground level based on LiDAR

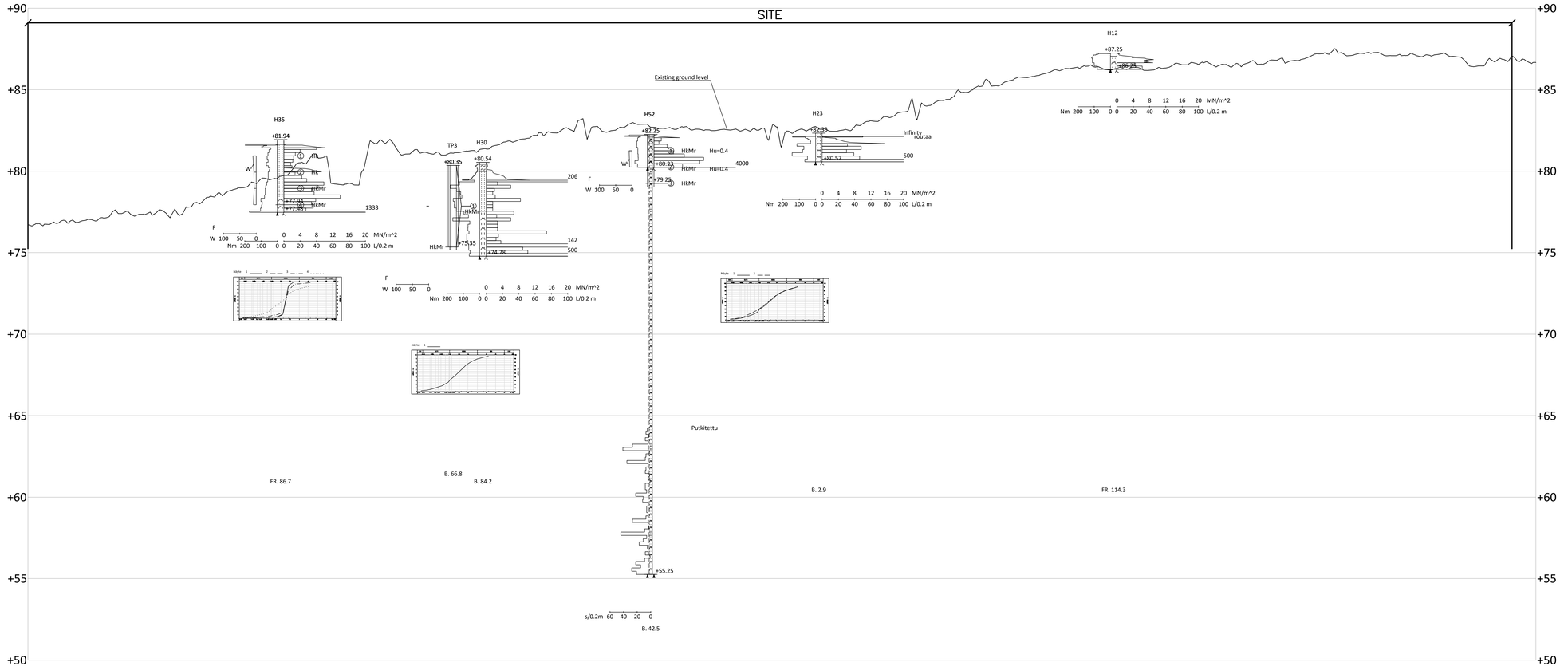
District	Block	Lot
Building no.		
Building section		
Building project unit address:		
Project Hauki, Herva Site		
03°39'37"N 25°41'01"E		
Kärpässuontie / Turhapurontie		
59150 II		
SITOWISE	Linnoitustie 6 02600 Espoo 020-747 6000 www.sitowise.com	
Developed by	Checked by	Approved by
Laura Markkanen		Hannu Kemppainen

Authority clarification	
Co-ordinate height system	ETRS-TM35FIN / N2000
Drawing identification	GROUND INVESTIGATION
Drawing content	Section S08 - S08
Scale	1:2000 1:100
Category	GEO
Project No.	
Doc No.	
Rev.	
Tie location	
Date	28.4.2025
File	

LEGEND

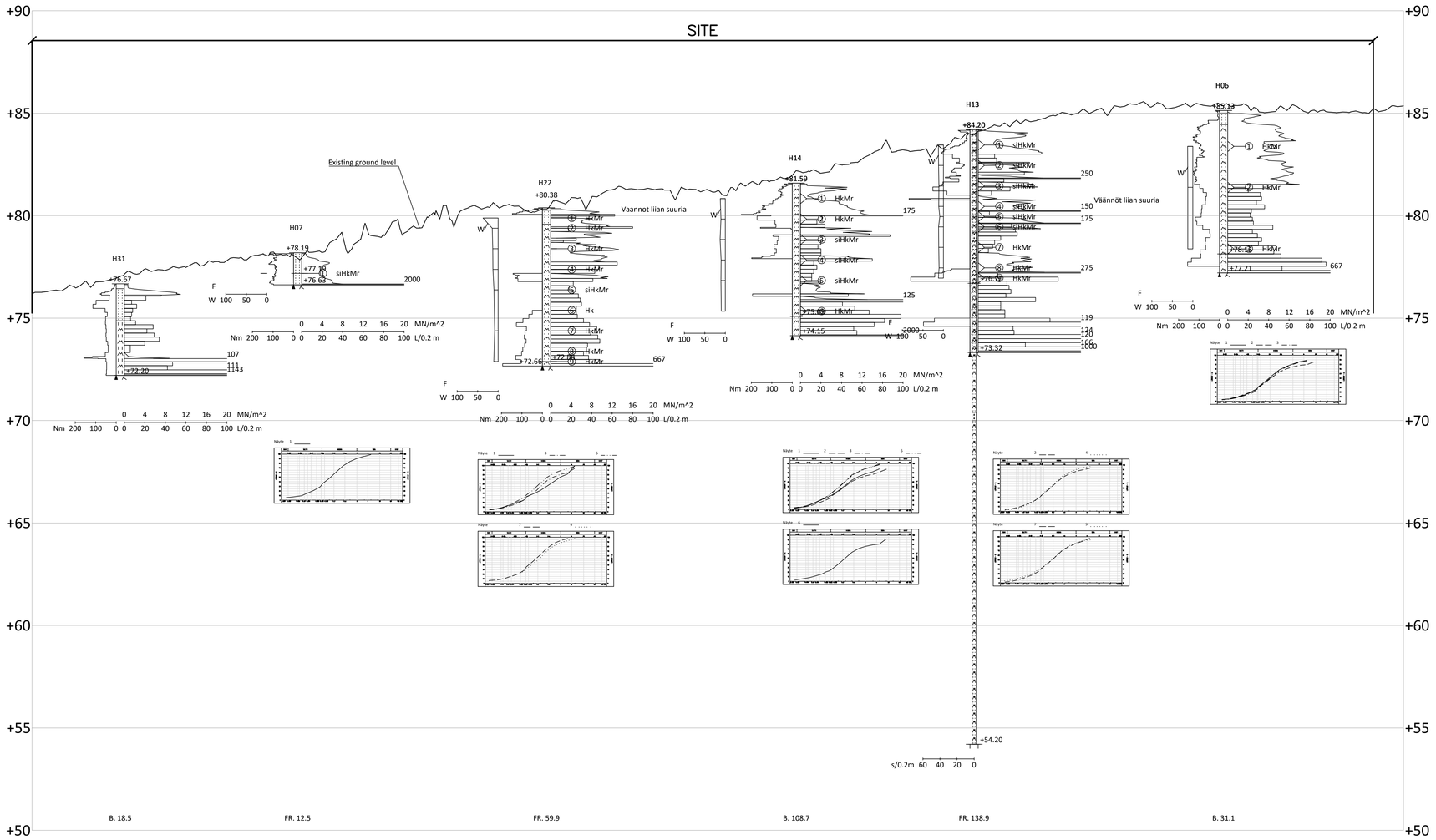
Existing ground level based on LiDAR

Section S09 - S09
1:2000 / 1:100



District	Block	Lot	Authority identification
Building no.			Co-ordinate/height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'03"E Kärpäsuontie / Turhapurontie 91150 li			Drawing content: Section S09 - S09; Scale: 1:2000 1:100
SITOWISE Liinintaude 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		Till Studiot
Designed by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 6.3.2025; File

Section S10 - S10
1:2000 / 1:100

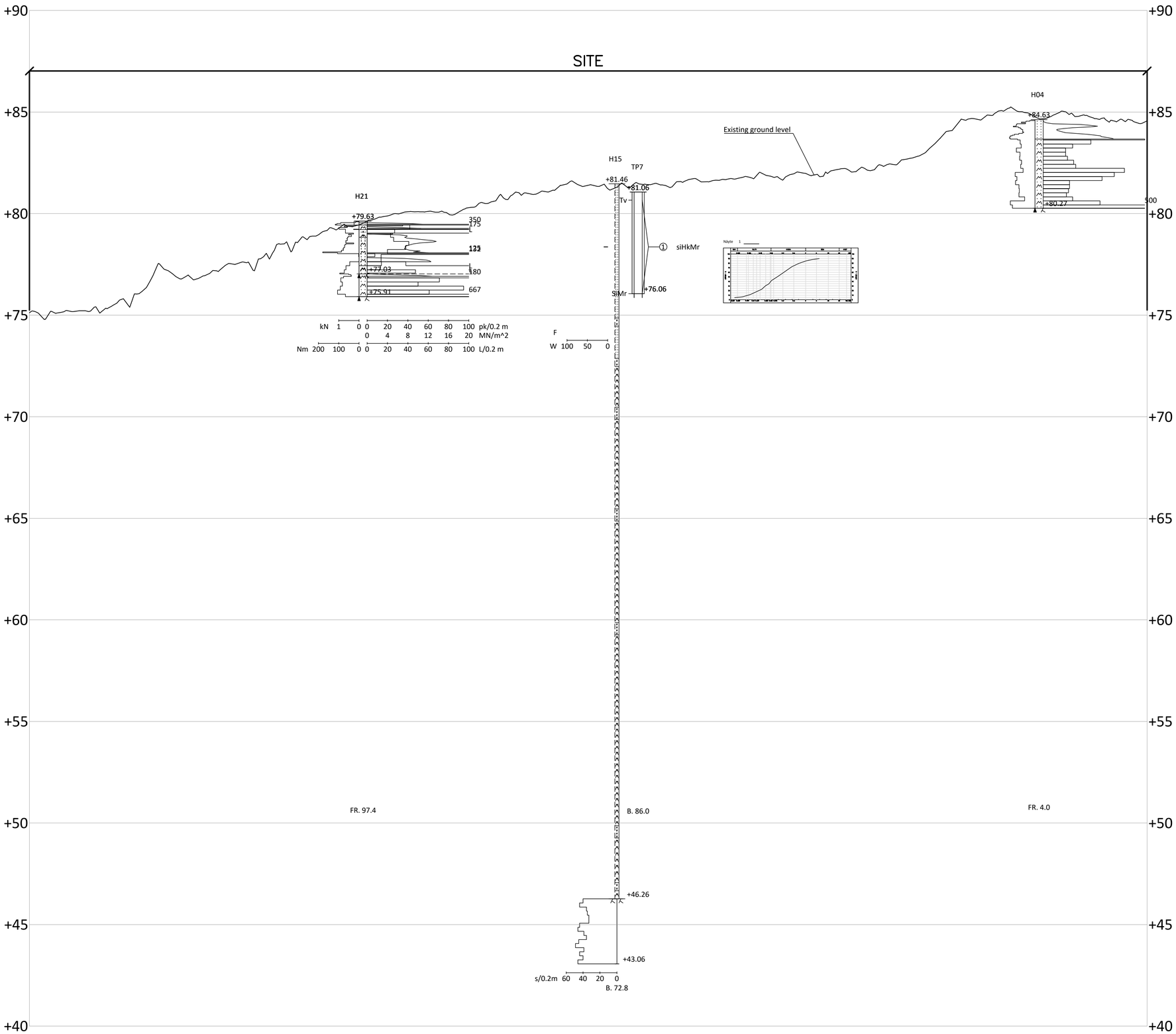


LEGEND

Existing ground level based on LiDAR

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site; 65°29'32"N 25°41'01"E; Kärppäsuontie / Turhapurontie; 91150 Ii			Drawing content: Section S10 - S10 — Scale: 1:2000, 1:100
SITOWISE — Linnoitustie 6, 02600 Espoo, 020 747 6000, www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 31.3.2025 — File

Section S11 - S11
1:2000 / 1:100



LEGEND

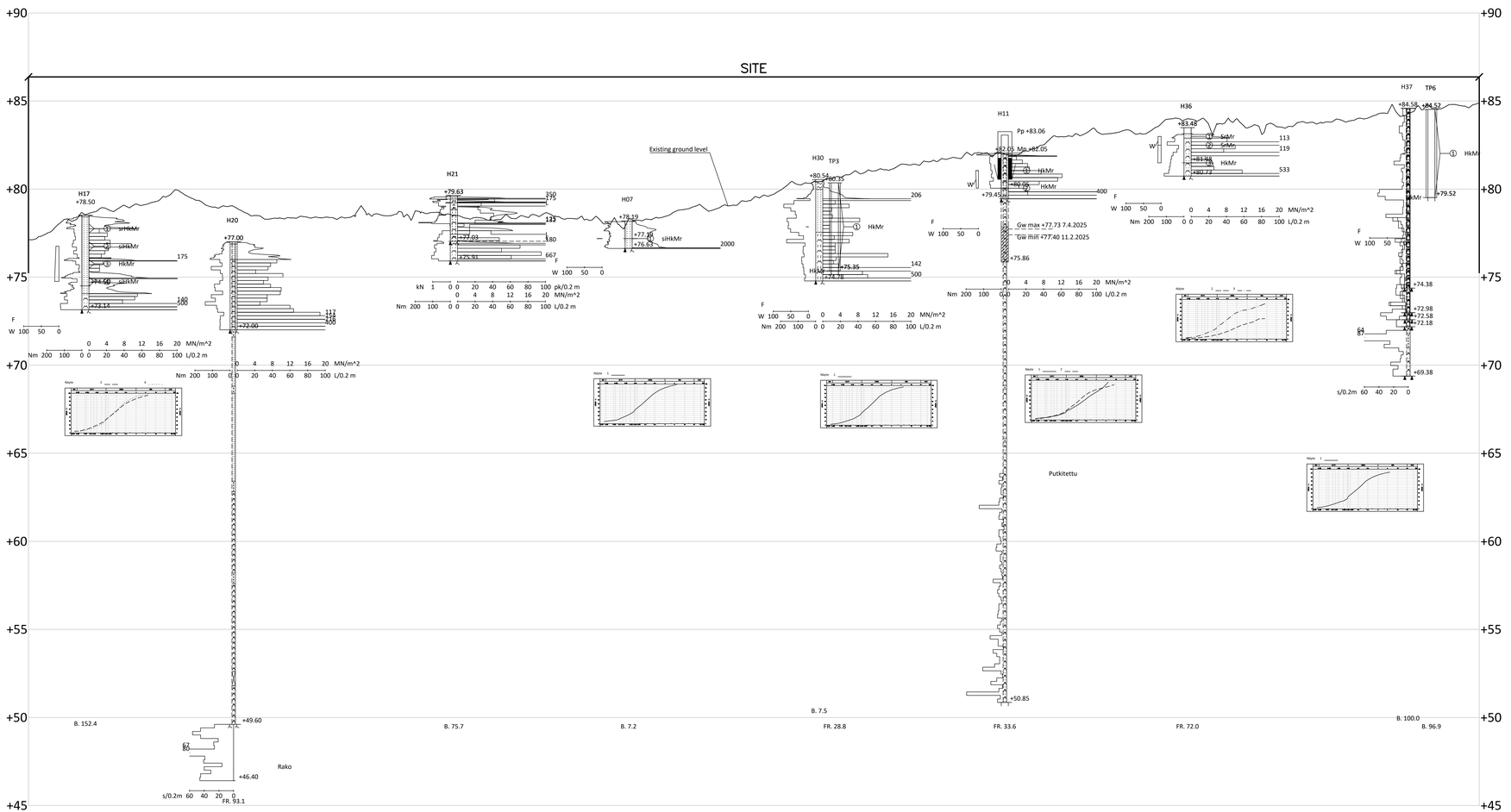
Existing ground level based on LiDAR

District / Block / Lot		Authority identification
Building no.		Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action		Drawing identification: GROUND INVESTIGATION / Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii		Drawing content: Section S11 - S11 / Scale: 1:2000, 1:100
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com		Category: GEO / Project No. / Doc.No. / Rev.
Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 11.2.2025 / File

LEGEND

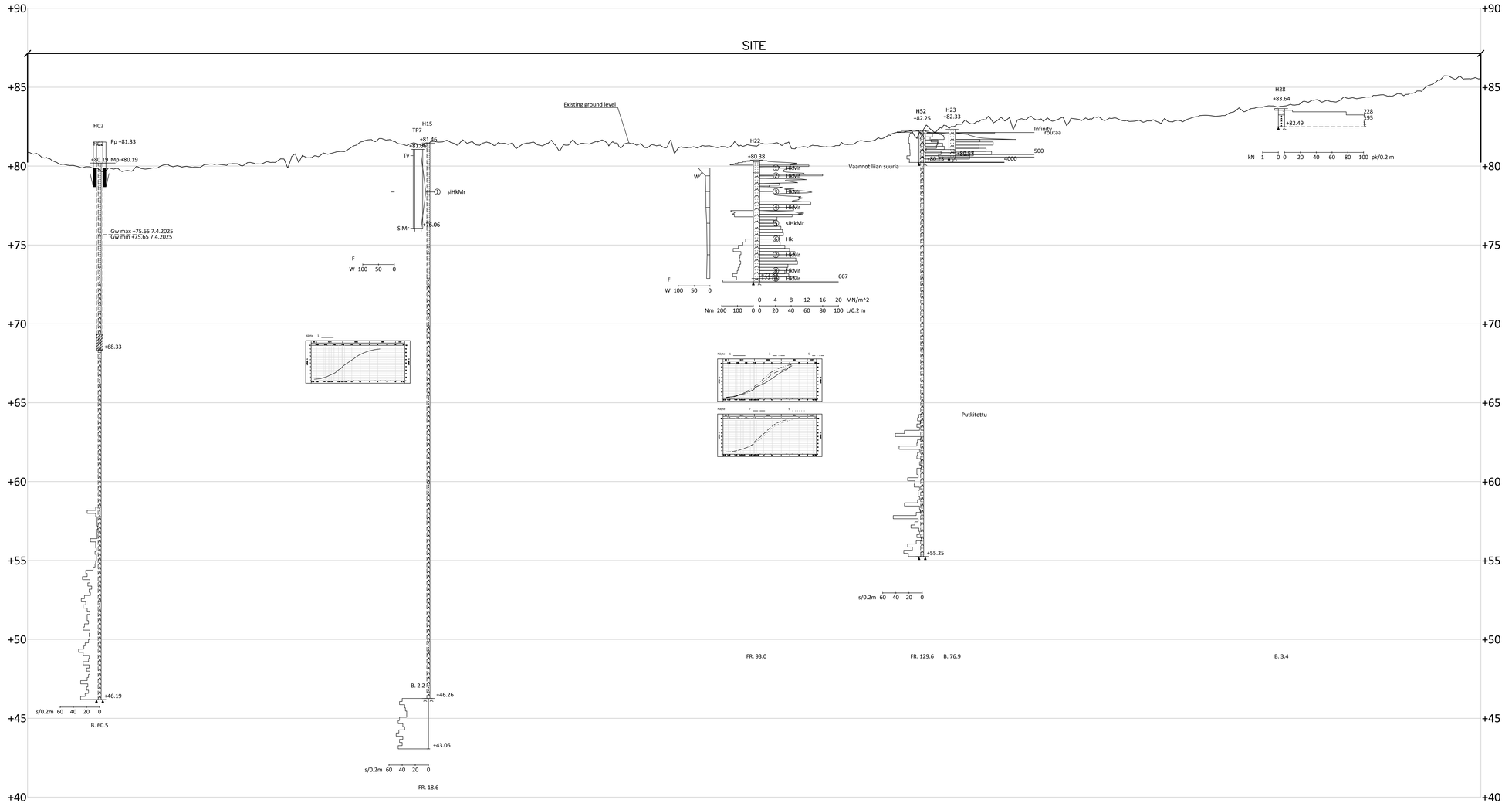
Existing ground level based on LiDAR

Section S12 - S12
1:2000 / 1:100



District / Block / Lot	Authority identification
Building no.	Co-ordinate/height system: ETRS-TM35FIN / N2000
Building action	Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site; 65°29'32"N 25°41'01"E; Kärpäsuontie / Turhapurontie; 91150 li	Drawing content: Section S12 - S12 — Scale: 1:2000, 1:100
SITOWISE; Ilmoitustie 6, 02600 Espoo, 020 747 6000, www.sitowise.com	Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by	Fill location
Designed by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 28.4.2025 — File

Section S13 - S13
1:2000 / 1:100



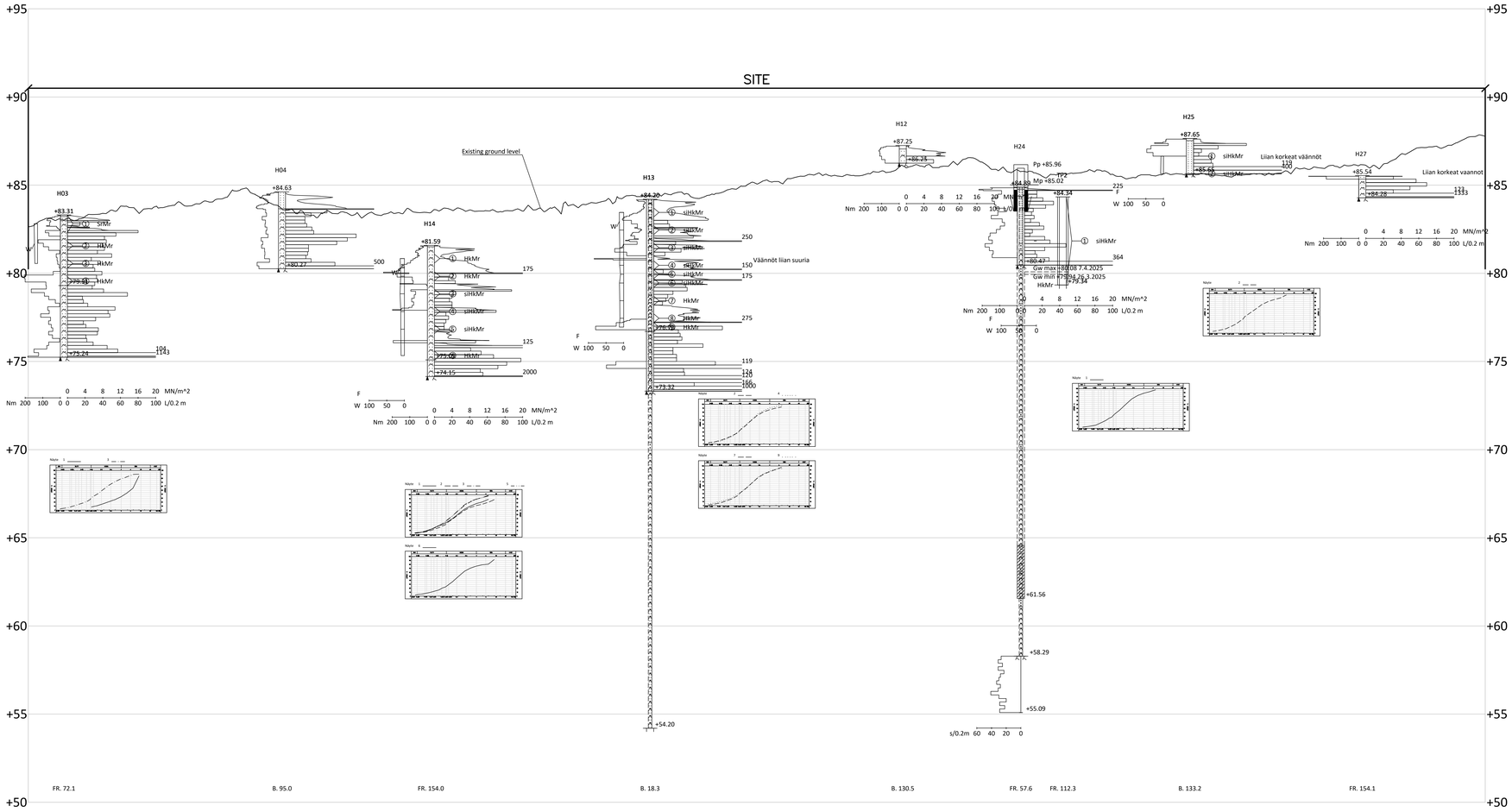
LEGEND

Existing ground level based on LiDAR

District	Block	Lot
Building no.		
Building action		
Building project and address		
Project Hauki, Herva Site		
65°29'32"N 25°41'01"E		
Kärpässuontie / Turhapurontie		
91150 fi		
SITOWISE	Lin=tuhdin 6 02600 Espoo 020 747 6000 www.sitowise.com	
Developed by	Checked by	
Designed by: Laura Markkanen	Approved by: Hannu Kemppainen	

Authority identification	
Co-ordinate/height system	ETRS-TM35FIN / N2000
Drawing identification	Consecutive no
GROUND INVESTIGATION	
Drawing content	Scale
Section S13 - S13	1:2000 1:100
Category: GEO	Project No. / Doc.No. / Rev.
Till: Vaattiot	
Date: 22.4.2025	File

Section S14 - S14
1:2000 / 1:100

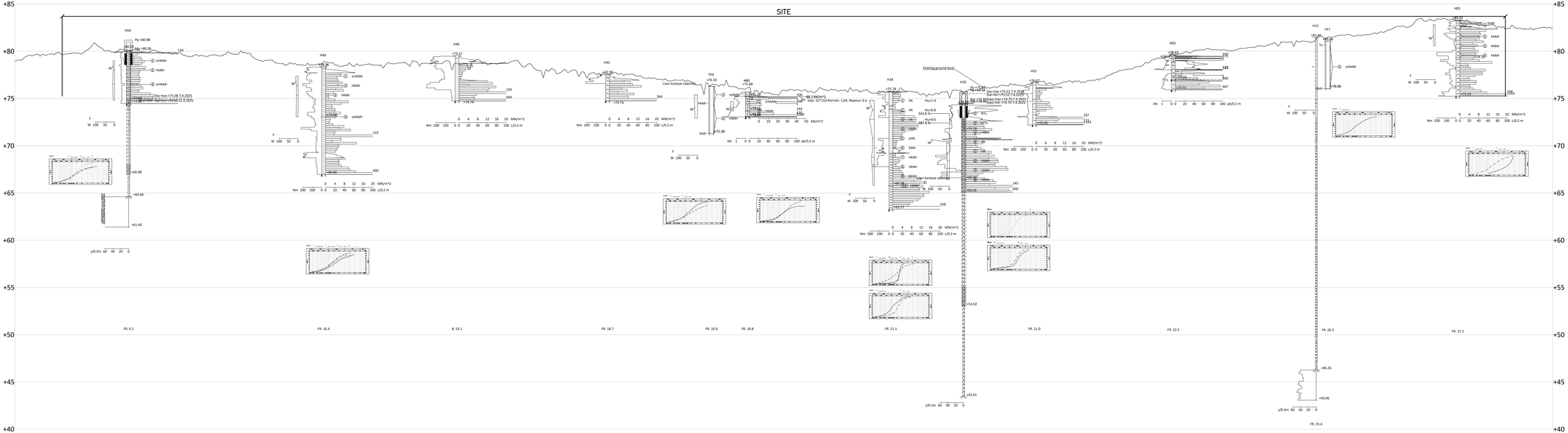


LEGEND

Existing ground level based on LiDAR

District	Block	Lot	Authority identification
Building no.			Co-ordinate/height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärpässuontie / Turhapurontie 91150 fi			Drawing content: Section S14 - S14; Scale: 1:2000 / 1:100
SITOWISE Urmo Lehdes 6 02610 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		Till Stuttard
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 28.4.2025; File

Section S15 - S15
1:2000 / 1:100



LEGEND

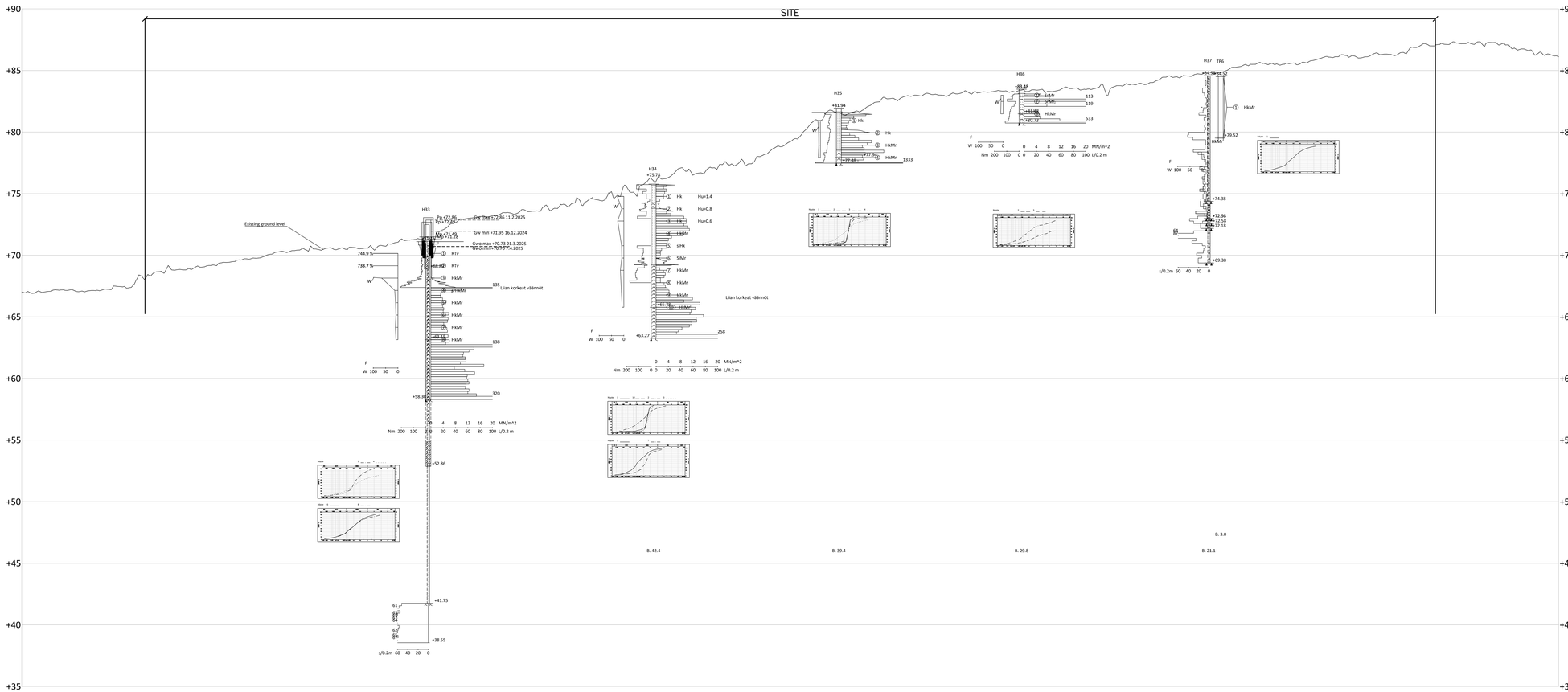
Existing ground level based on LIDAR

Client	Work	Lot	Authority Verification
Road no.			Coordinate/height system ETRS-TM35FIN / N2000
Road & area			Drawing identification GROUND INVESTIGATION
Road & project, or it address Project Hauki, Herva Site 61°29'32"N 25°07'07"E Kangasluontie / Turhapuronte 31720 Ir			Drawing content Section S15 - S15
			Scale 1:2000 1:100
SITOWISE Sitowise Group Oy Lars Sonckin kaari 16 02600 Espoo www.sitowise.com	Client no.		Category GEO
			Project No.
			Doc No.
			Rev.
Designed by Lasse Mattanen	Approved by Hannu Kerttypaavo		Date 28.4.2025

LEGEND

Existing ground level based on LiDAR

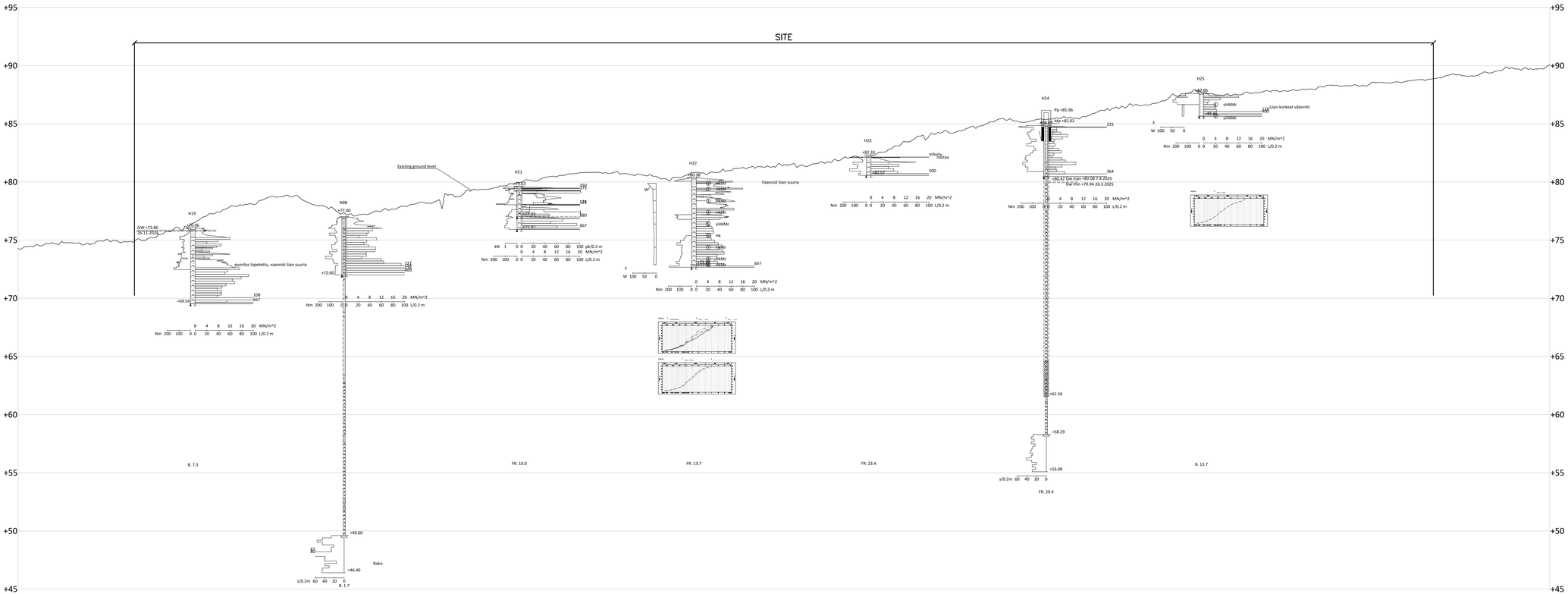
Section S16 - S16
1:2000 / 1:100



District	Block	Lot
Building no.		
Building action		
Building project and address Project Hauki, Herva Site 61°29'32"N 22°41'01"E Kärppäsomntie / Turhapurontie 91150 E		
Developed by SITOWISE Consultancy in Construction 020 747 6000 www.sitowise.com		
Drafted by Laura Markkanen	Checked by	Approved by Hannu Kemppainen

Authority identification	
Co-ordinate/height system ETRS-TM35FIN / N2000	
Drawing identification GROUND INVESTIGATION	Conservation no.
Drawing content Section S16 - S16	Scale 1:2000 1:100
Category GEO	Project No. / Doc No. / Rev.
File location	
Date 28.4.2025	File

Section S17 - S17
1:2000 / 1:100

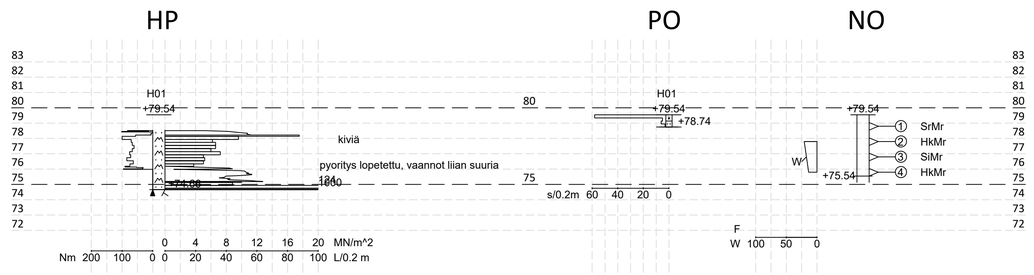


LEGEND

Existing ground level based on LiDAR

District	Block	Lot	Authority identification
Building no.			Co-ordinate/length system EUREF-FIN/TM35FIN / N2000
Building action			Drawing identification GEO/KVT INVESTIGATION
Building/plan site address Project Hauki, Herva Site 65°29'33"N 25°41'01"E Kärppäläsuontie / Turkupuronti 91153 Ii			Drawing content Section S17 - S17
			Scale 1:2000 1:100
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6300 www.sitowise.com			Category GEO
Client/applicant	Checked by		Project No. / Doc No. / Rev.
Drafted by Laura Markkanen	Approved by Hannu Ikonpoanen		Date 28.4.2026

SOUNDINGS, H01



Laboratory Analysis Report

Page 1
5.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H01	21738

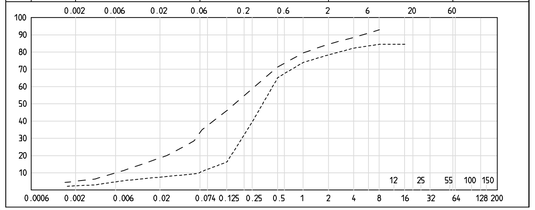
	X	Y	Z
	7263100.748	438022.008	79.543

	Archive number	Plan number

Customer	Analysis

Sample ID	a	b----------	c	d- - - - -
Laboratory number	1/N05216568	2/N05216569	3/N05216570	4/N05216571
Station				
Depth	0.75	1.75	2.75	3.75
Elevation	78.79	77.79	76.79	75.79
Sampling date (dd/mm/yyyy)	19.11.2024	19.11.2024	19.11.2024	19.11.2024
Bulk density: dry, wet				
Specific gravity				
Water content %		20.9		13.6
Humus: LOI, NaOH %				
Frost Suspectibility Frost-proof Non-frost-proof				
Load-bearing class				
Capillarity				
Soil type	SrMr	HkMr	SiMr	HkMr
Remoulding index %				

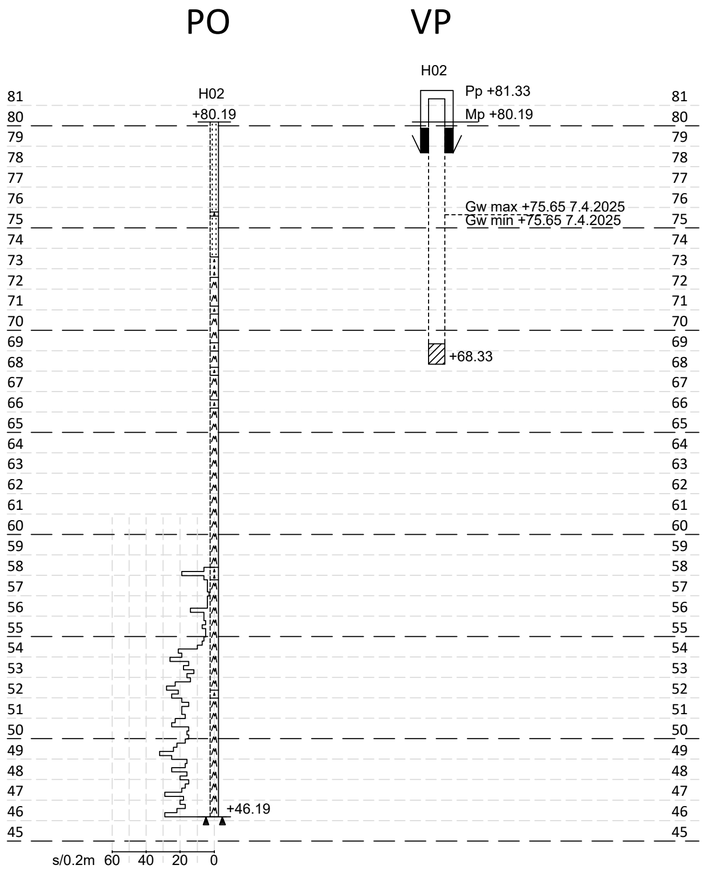
GEO | CLAY | SILT | SAND | GRAVEL | ROCKS

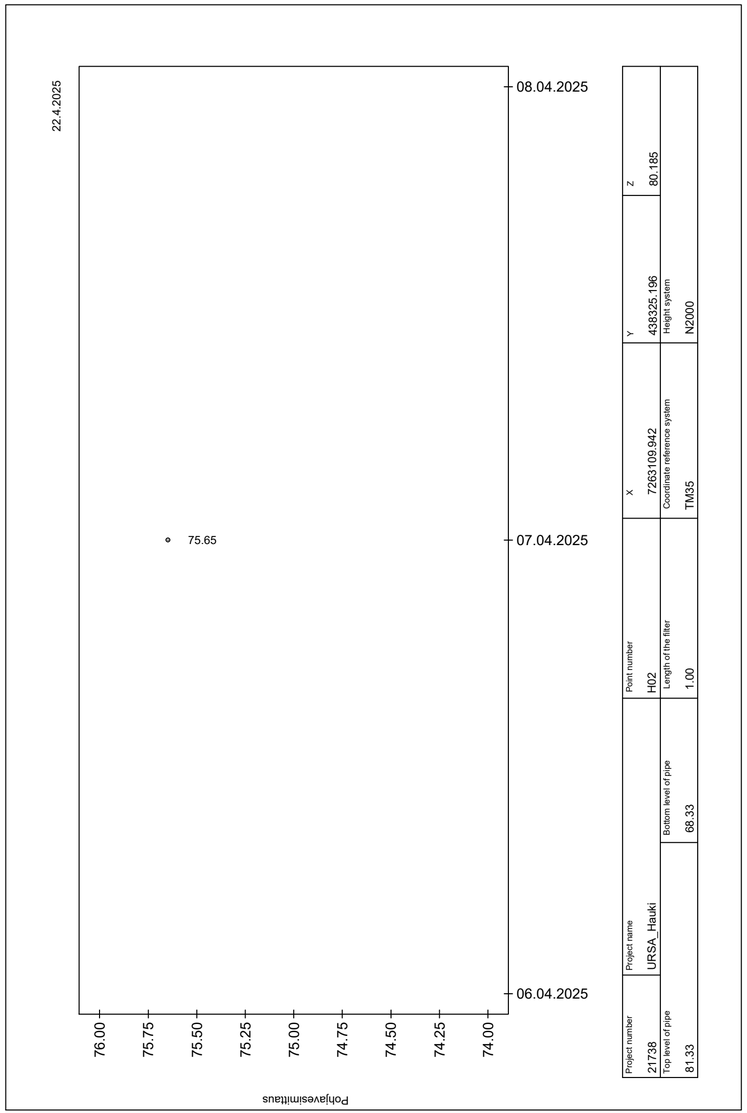


Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site; 65°29'32"N 25°41'01"E; Kärppäsuontie / Turhapurontie; 91150 Ii			Drawing content: Soundings H01, HP, PO, NO; Scale: 1:200
SITOWISE; Liinatuutie 6, 02600 Espoo, 020 747 6000, www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

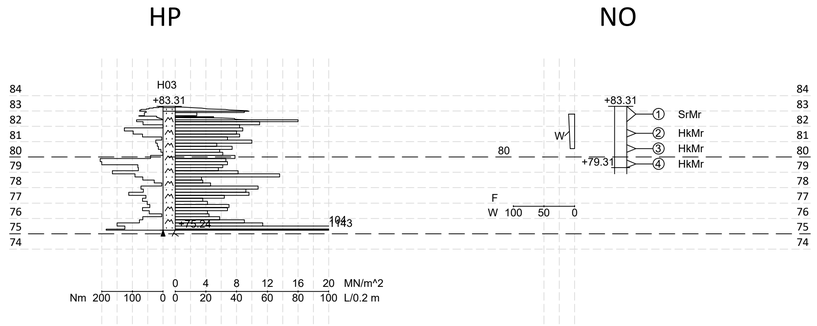
SOUNDINGS, H02





District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H02 PO, VP — Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 22.4.2025 — File

SOUNDINGS, H03



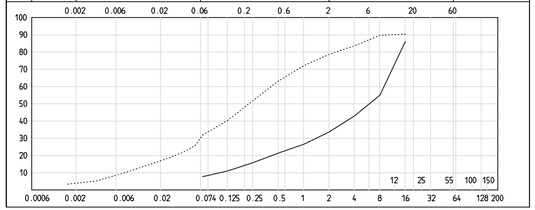
Laboratory Analysis Report

Page 1
7.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H03	21738
x	Y	Z	
7263126.221	438622.238	83.306	
Archive number	Plan number		
Customer		Analysis	

Sample ID	a	b	c	d	
Laboratory number	1/N05216573	2/N05216574	3/N05216575	4/N05216576	
Station					
Depth	0.50	1.75	2.75	3.75	
Elevation	82.81	81.56	80.56	79.56	
Sampling date (dd/mm/yyyy)	20.11.2024	20.11.2024	20.11.2024	20.11.2024	
Bulk density: dry, wet					
Specific gravity					
Water content %	9.6		7.4		
Humus: LOI, NaOH %					
Frost Suspectibility (Frost-proof / Non-frost-proof)					
Load-bearing class					
Capillarity					
Soil type	SrMr	HkMr	HkMr	HkMr	
Remoulding index %					

GEO | CLAY | SILT | SAND | GRAVEL | ROCKS

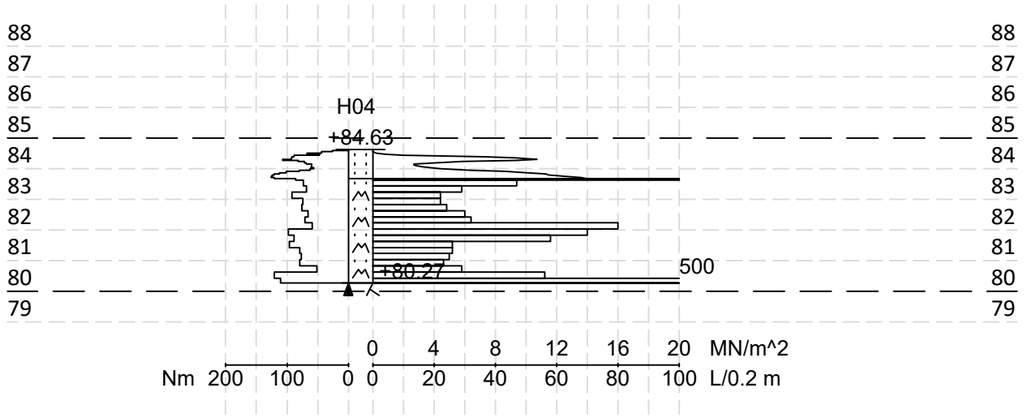


Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H03 HP, NO — Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025 — File

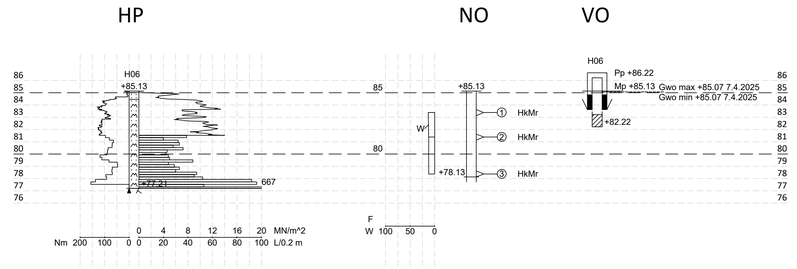
SOUNDINGS, H04

HP



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H04 HP; Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H06

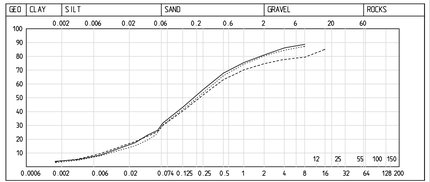


Laboratory Analysis Report

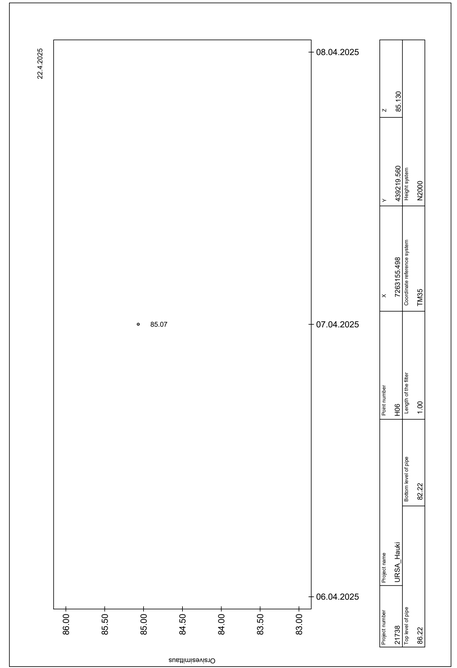
Page 1
5.2.2025

Map sheet		Point name	Point number	Project number
		URSA_Hauki	H06	21738
	X	Y	Z	
	7263155.498	439219.560	85.130	
	Archive number	Plan number		
Customer		Analysis		

Sample ID	a ———	b ----------	c		
Laboratory number	1/N05216578	2/N05216579	3/N05216580		
Station					
Depth	1.75	3.75	6.75		
Elevation	83.38	81.38	78.38		
Sampling date (dd/mm/yyyy)	28.11.2024	28.11.2024	28.11.2024		
Bulk density: dry, wet					
Specific gravity					
Water content %	12.9	12.3	12.3		
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	HkMr	HkMr	HkMr		
Remoulding index %					



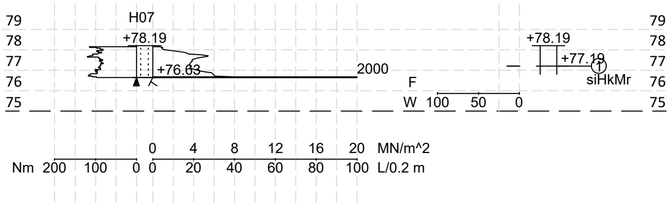
Comments



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system ETRS-TM35FIN / N2000
Building action			Drawing identification GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site; 65°29'32"N 25°41'01"E; Kärppäsuontie / Turhapurontie; 91150 II			Drawing content: Soundings H06; HP, NO, VO — Scale 1:200
SITOWISE — Linnoitustie 6, 02600 Espoo, 020 747 6000, www.sitowise.com			Category GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 22.4.2025 — File

SOUNDINGS, H07

HP NO



Laboratory Analysis Report

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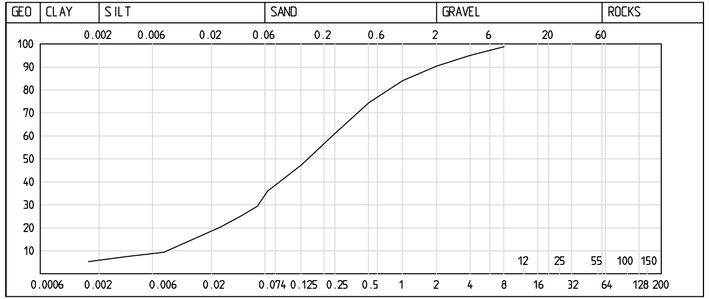
Map sheet	Point name	Point number	Project number
	URSA_Hauki	H07	21738

X	Y	Z
7263902.512	438709.293	78.187

Archive number	Plan number

Customer	Analysis

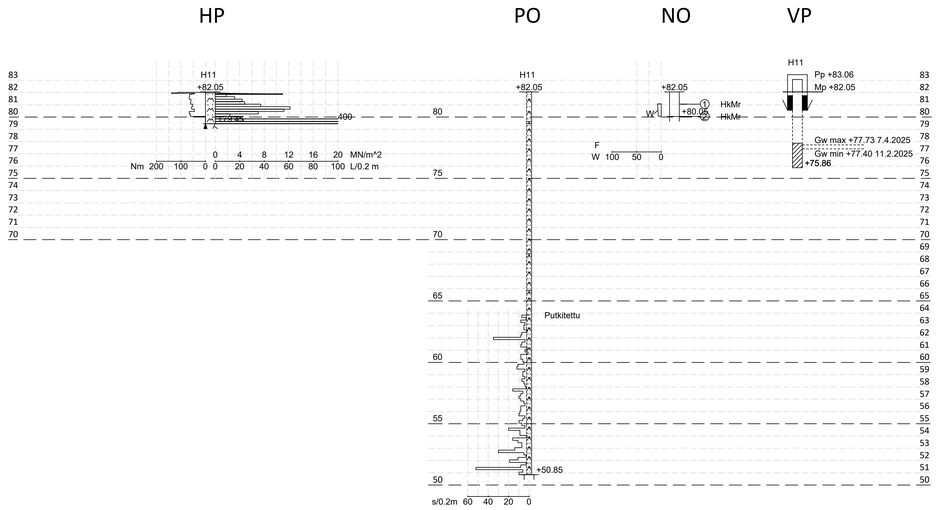
Sample ID	a				
Laboratory number	1/N05256988				
Station					
Depth	1.00				
Elevation	77.19				
Sampling date (dd/mm/yyyy)	30.1.2025				
Bulk density: dry, wet					
Specific gravity					
Water content %	15.1				
Humus: LOI, NaOH %					
Frost Suspectibility	Frost-proof / Non-frost-proof				
Load-bearing class					
Capillarity					
Soil type	siHkMr				
Remoulding index %					



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H07 HP, NO Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 6.3.2025; File

SOUNDINGS, H11

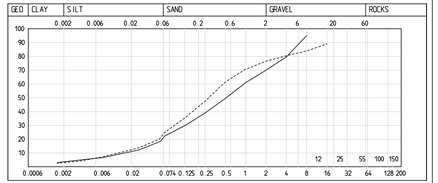


Laboratory Analysis Report

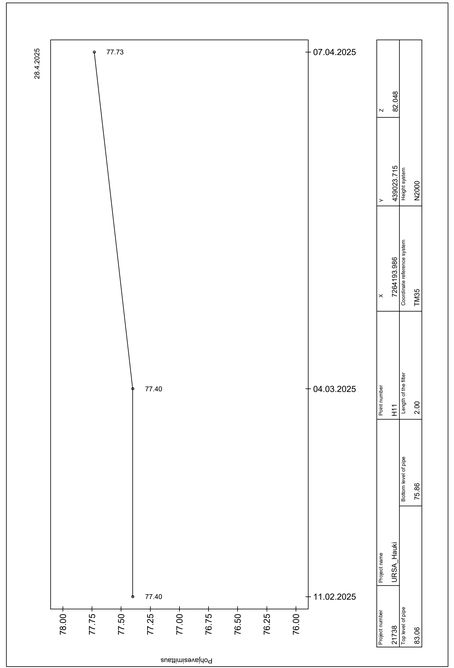
Page 1
5.3.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H11	21738
X: 7264193.986	Y: 439023.715	Z: 82.048	
Archive number	Plan number		
Customer		Analysis	

Sample ID	a	b
Laboratory number	1/N05256990	2/N05256991
Station		
Depth	1.00	2.00
Elevation	81.05	80.05
Sampling date (dd/mm/yyyy)	1.2.2025	1.2.2025
Bulk density: dry, wet		
Specific gravity		
Water content %	7.6	5.9
Humus: LOI, NaOH %		
Frost Susceptibility (Frost-proof / Non-frost-proof)		
Load-bearing class		
Capillarity		
Soil type	HkMr	HkMr
Remoulding index %		



Comments



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system ETRS-TM35FIN / N2000
Building action			Drawing identification GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site; 65°29'32"N 25°41'01"E; Kärppäkuontie / Turhapurontie; 91150 Ii			Drawing content: Soundings H11; HP, PO, NO, VP — Scale 1:200

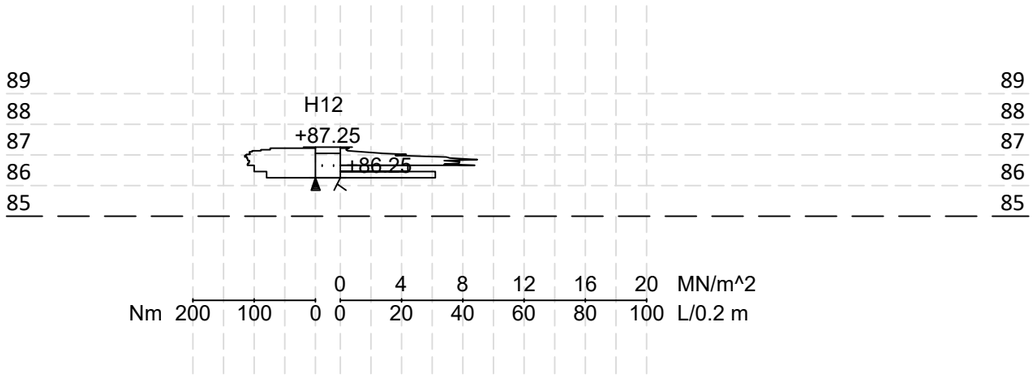
SITOWISE — Linnoitustie 6, 02600 Espoo, 020 747 6000, www.sitowise.com

Category: GEO — Project No. — Doc No. — Rev.

Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 28.4.2025 — File

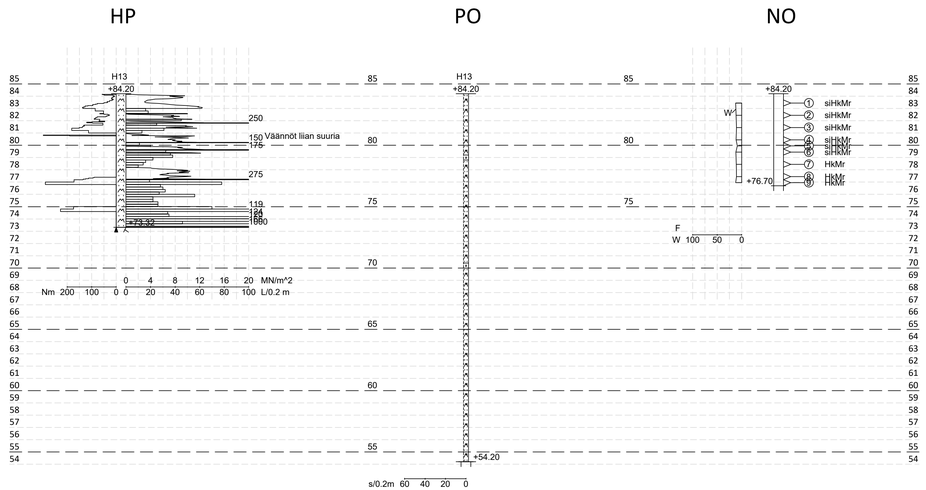
SOUNDINGS, H12

HP



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H12 HP; Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H13



Laboratory Analysis Report

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5.2.2025

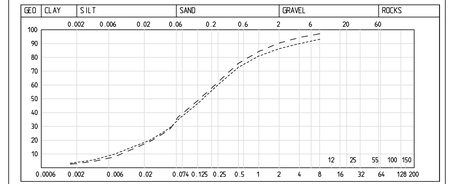
Map sheet	Point name	Point number	Project number
	URSA_Hauki	H13	21738

	X	Y	Z
	7263452.216	439208.313	84.202

	Archive number	Plan number

Customer	Analysis

Sample ID	a	b	c	d	e
Laboratory number	1/N05216582	2/N05216583	3/N05216584	4/N05216585	5/N05216586
Station					
Depth	0.75	1.75	2.75	3.75	4.25
Elevation	83.45	82.45	81.45	80.45	79.95
Sampling date (dd/mm/yyyy)	10.12.2024	10.12.2024	10.12.2024	10.12.2024	10.12.2024
Bulk density: dry, wet					
Specific gravity					
Water content %	12.3	11.6	10.7	11.4	8.8
Humus: LOI, NaOH %					
Frost Suspectibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	siHkMr	siHkMr	siHkMr	siHkMr	siHkMr
Remoulding index %					



Comments

Laboratory Analysis Report

Page 2
5.2.2025

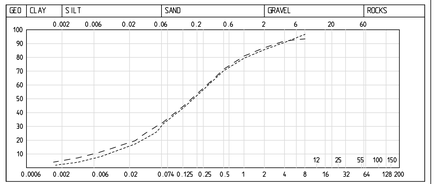
Map sheet	Point name	Point number	Project number
	URSA_Hauki	H13	21738

	X	Y	Z
	7263452.216	439208.313	84.202

	Archive number	Plan number

Customer	Analysis

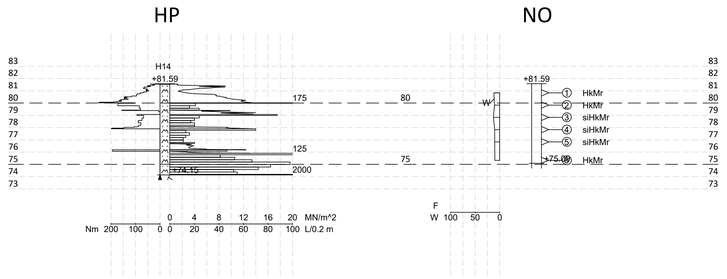
Sample ID	a	b	c	d	
Laboratory number	6/N05216587	7/N05216588	8/N05216589	9/N05216590	
Station					
Depth	4.75	5.75	6.75	7.25	
Elevation	79.45	78.45	77.45	76.95	
Sampling date (dd/mm/yyyy)	10.12.2024	10.12.2024	10.12.2024	10.12.2024	
Bulk density: dry, wet					
Specific gravity					
Water content %	11.7	11.1	10.6	12.1	
Humus: LOI, NaOH %					
Frost Suspectibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	siHkMr	HkMr	HkMr	HkMr	
Remoulding index %					



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site; 65°29'32"N 25°41'01"E; Kärppäluontie / Turhapurontie; 91150 fi			Drawing content: Soundings H13, HP, PO, NO — Scale: 1:200
SITOWISE; Linnoitustie 6, 02600 Espoo, 020 747 6000, www.sitowise.com			Category: GEO — Project No. — Doc No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025 — File

SOUNDINGS, H14



Laboratory Analysis Report

Page 1
5.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H14	21738

	X	Y	Z
	7263441.150	438906.162	81.585

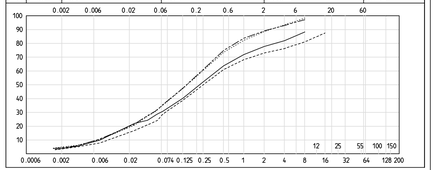
	Archive number	Plan number

Customer

Analysis

Sample ID	a ———	b ----------	c ·····-·····	d	e —·—·—·—
Laboratory number	1/N05216592	2/N05216593	3/N05216594	4/N05216595	5/N05216596
Station					
Depth	0.75	1.75	2.75	3.75	4.75
Elevation	80.84	79.84	78.84	77.84	76.84
Sampling date (dd/mm/yyyy)	11.12.2024	11.12.2024	11.12.2024	11.12.2024	11.12.2024
Bulk density: dry, wet					
Specific gravity					
Water content %	12.0	10.7	12.6	10.2	10.4
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	HkMr	HkMr	siHkMr	siHkMr	siHkMr
Remoulding index %					

GEO	CLAY	SILT	SAND	GRAVEL	ROCKS



Comments

Laboratory Analysis Report

Page 2
5.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H14	21738

	X	Y	Z
	7263441.150	438906.162	81.585

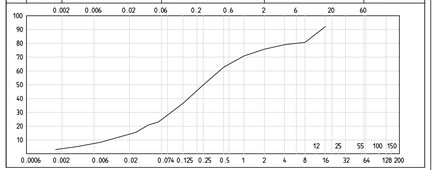
	Archive number	Plan number

Customer

Analysis

Sample ID	a ———				
Laboratory number	6/N05216597				
Station					
Depth	6.25				
Elevation	75.34				
Sampling date (dd/mm/yyyy)	11.12.2024				
Bulk density: dry, wet					
Specific gravity					
Water content %	9.6				
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	HkMr				
Remoulding index %					

GEO	CLAY	SILT	SAND	GRAVEL	ROCKS



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site, 65°29'32"N 25°41'01"E, Kärppäluontie / Turhapuurontie, 91150 II			Drawing content: Soundings H14, HP, NO — Scale: 1:200

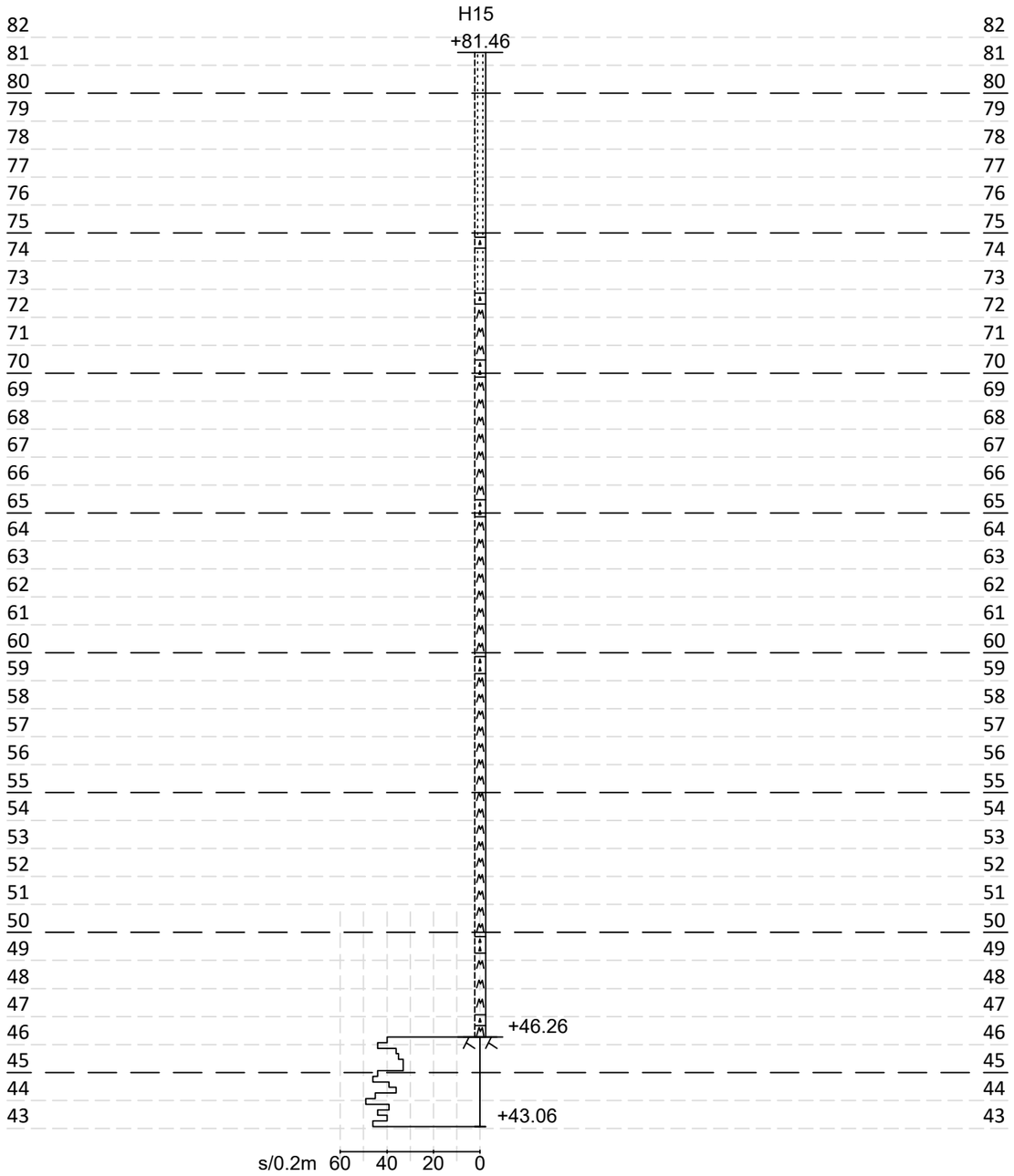
SITOWISE — Linnoitustie 6, 02600 Espoo, 020 747 6000, www.sitowise.com

Category: GEO — Project No. — Doc No. — Rev.

Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 7.2.2025 — File

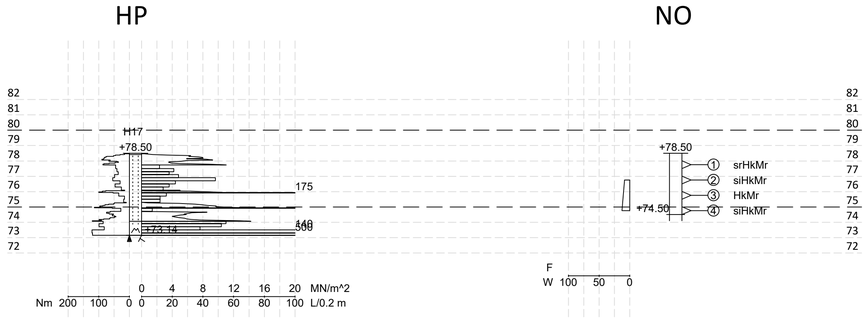
SOUNDINGS, H15

PO



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H15 PO — Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025 — File

SOUNDINGS, H17



Laboratory Analysis Report

Page 1
7.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H17	21738

X	Y	Z
7263413.001	438307.842	78.503

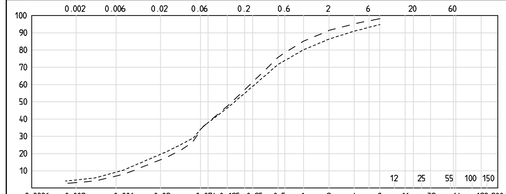
Archive number	Plan number

Customer

Analysis

Sample ID	a	b----------	c	d- - - - -
Laboratory number	1/N05216599	2/N05216600	3/N05216601	4/N05216602
Station				
Depth	0.75	1.75	2.75	3.75
Elevation	77.75	76.75	75.75	74.75
Sampling date (dd/mm/yyyy)	14.11.2024	14.11.2024	14.11.2024	14.11.2024
Bulk density: dry, wet				
Specific gravity				
Water content %		8.5		12.5
Humus: LOI, NaOH %				
Frost Susceptibility Frost-proof Non-frost-proof				
Load-bearing class				
Capillarity				
Soil type	srHkMr	siHkMr	HkMr	siHkMr
Remoulding index %				

GEO | CLAY | SILT | SAND | GRAVEL | ROCKS



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site; 65°29'32"N 25°41'01"E; Kärppäsuontie / Turhapurontie; 91150 Ii			Drawing content: Soundings H17, HP, NO; Scale: 1:200

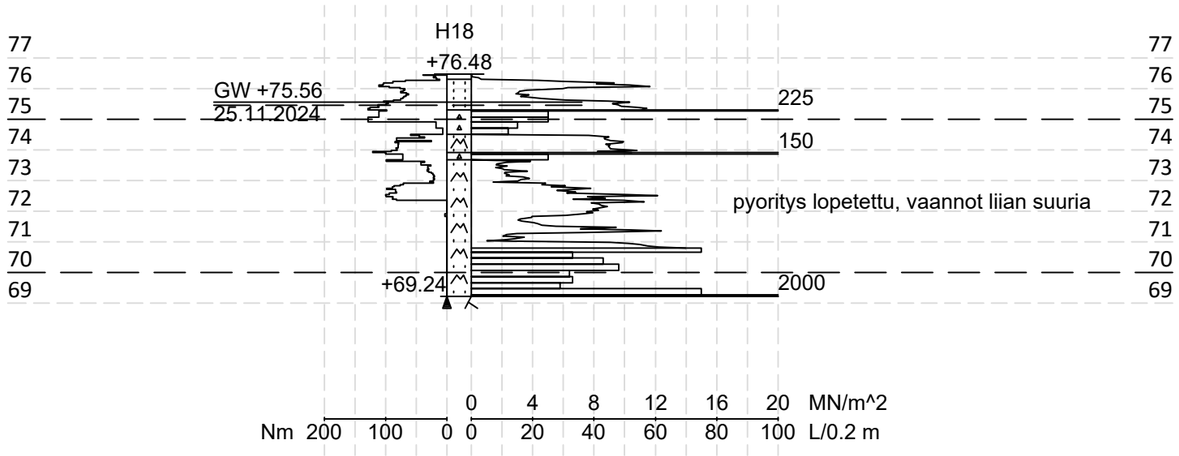
SITOWISE
Linnoitustie 6
02600 Espoo
020 747 6000
www.sitowise.com

Category: GEO; Project No.; Doc.No.; Rev.

Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 7.2.2025; File

SOUNDINGS, H18

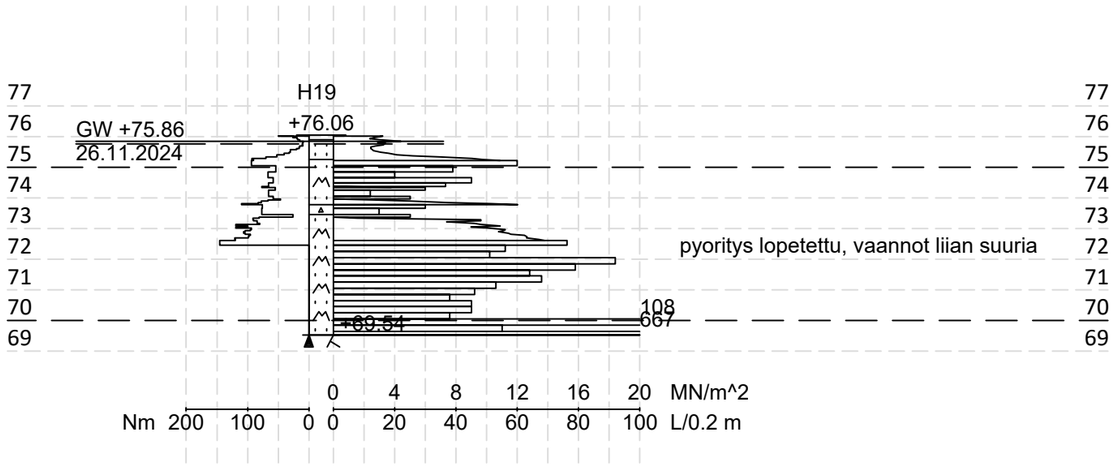
HP



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H18 HP; Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H19

HP

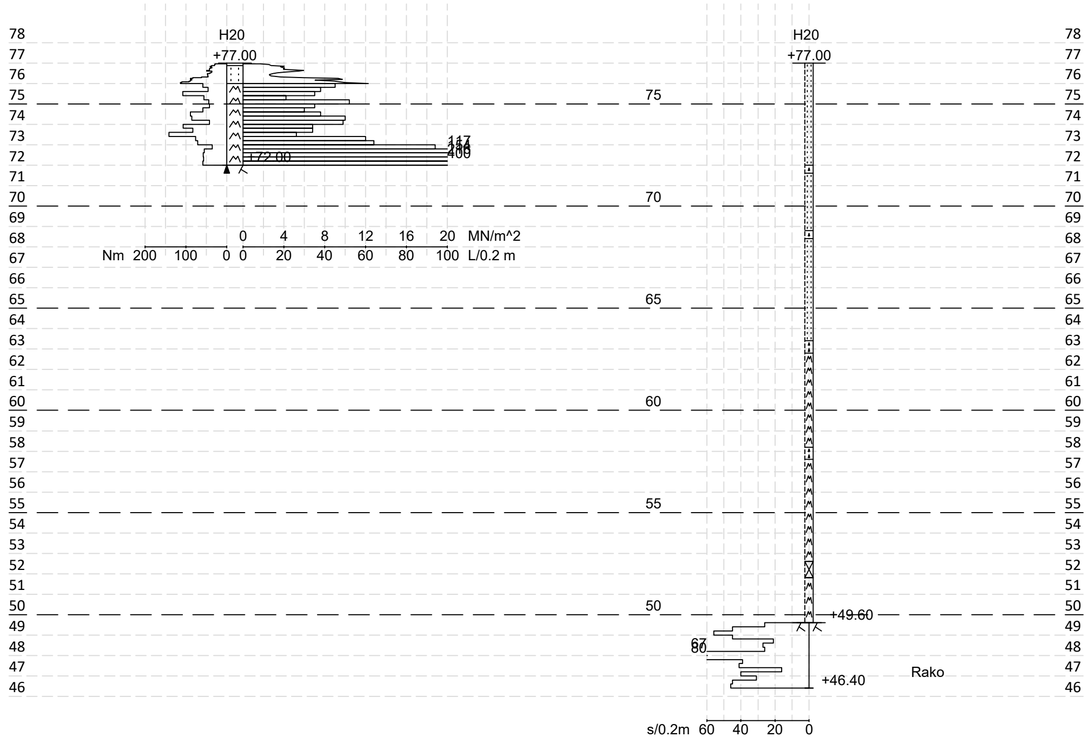


District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H19 HP; Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H20

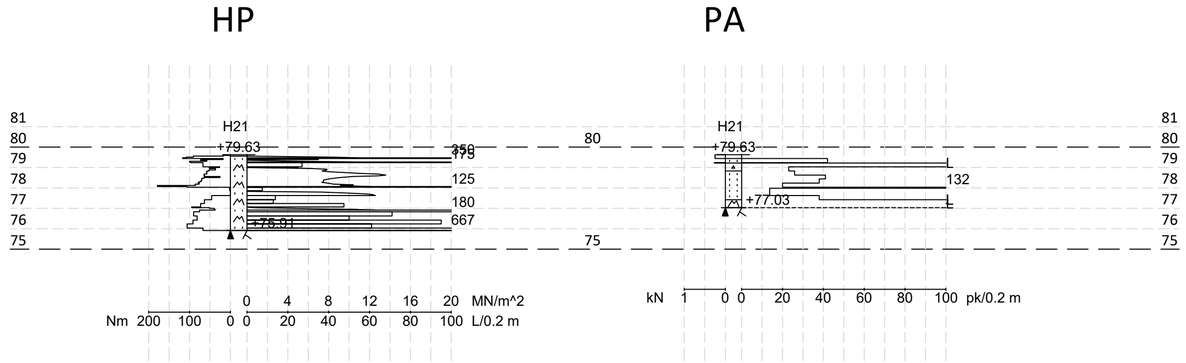
HP

PO



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H20 HP, PO — Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025 — File

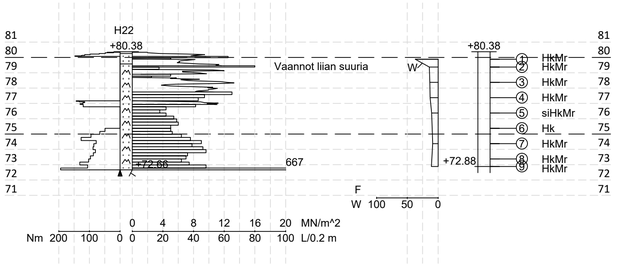
SOUNDINGS, H21



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H21 HP, PA; Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H22

HP



NO

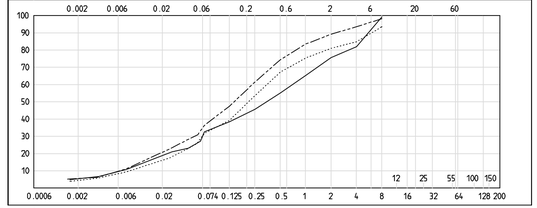
Laboratory Analysis Report

Page 1
5.3.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H22	21738
x 7263737.337	Y 438893.637	Z 80.381	
Archive number	Plan number		
Customer		Analysis	

Sample ID	a	b	c	d	e
Laboratory number	1/N05256993	2/N05256994	3/N05256995	4/N05256996	5/N05256997
Station					
Depth	0.50	1.00	2.00	3.00	4.00
Elevation	79.88	79.38	78.38	77.38	76.38
Sampling date (dd/mm/yyyy)	15.1.2025	15.1.2025	15.1.2025	15.1.2025	15.1.2025
Bulk density: dry, wet					
Specific gravity					
Water content %	37.0	14.4	13.2	12.8	10.2
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	HkMr	HkMr	HkMr	HkMr	siHkMr
Remoulding index %					

GEO | CLAY | SILT | SAND | GRAVEL | ROCKS



Comments

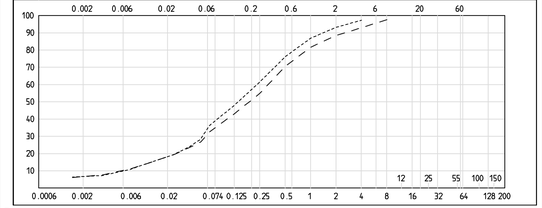
Laboratory Analysis Report

Page 2
5.3.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H22	21738
x 7263737.337	Y 438893.637	Z 80.381	
Archive number	Plan number		
Customer		Analysis	

Sample ID	a	b	c	d	
Laboratory number	6/N05256998	7/N05256999	8/N05257000	9/N05257001	
Station					
Depth	5.00	6.00	7.00	7.50	
Elevation	75.38	74.38	73.38	72.88	
Sampling date (dd/mm/yyyy)	15.1.2025	15.1.2025	15.1.2025	15.1.2025	
Bulk density: dry, wet					
Specific gravity					
Water content %		8.8		10.7	
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	Hk	HkMr	HkMr	HkMr	
Remoulding index %					

GEO | CLAY | SILT | SAND | GRAVEL | ROCKS

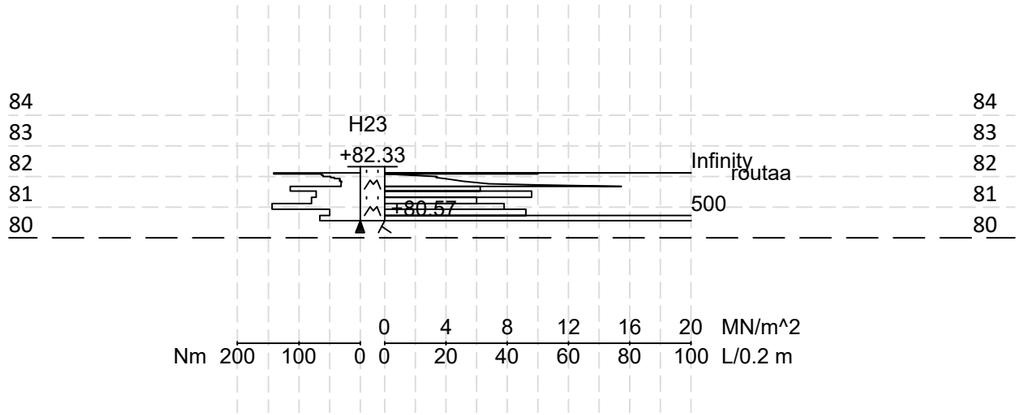


Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site; 65°29'32"N 25°41'01"E; Kärppäsuontie / Turhapurontie; 91150 Ii			Drawing content: Soundings H22, HP, NO; Scale: 1:200
SITOWISE; Linnoitustie 6, 02600 Espoo, 020 747 6000, www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 6.3.2025; File

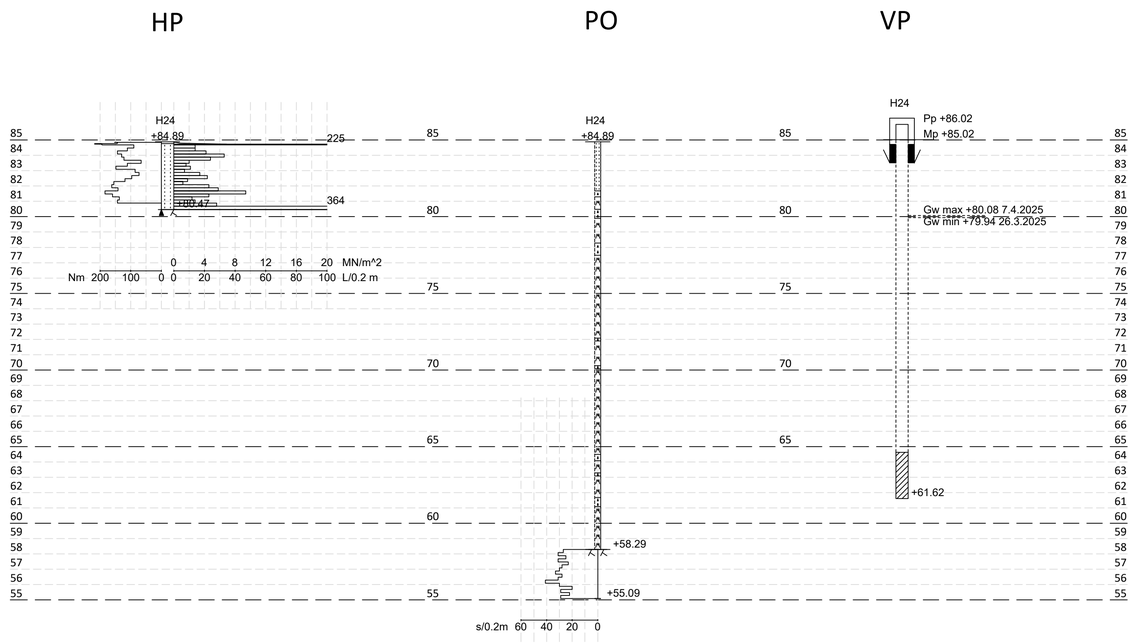
SOUNDINGS, H23

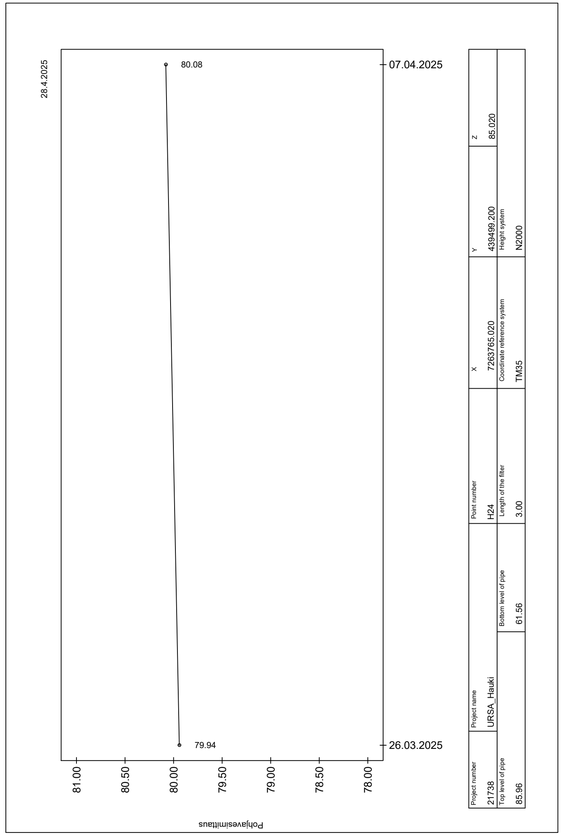
HP



District / Block / Lot		Authority identification
Building no.		Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action		Drawing identification: GROUND INVESTIGATION / Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii		Drawing content: Soundings H23 HP / Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com		Category: GEO / Project No. / Doc.No. / Rev.
Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 7.2.2025 / File

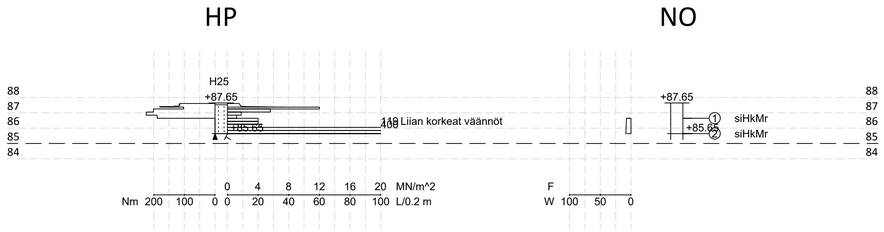
SOUNDINGS, H24





District / Block / Lot		Authority identification
Building no.		Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action		Drawing identification: GROUND INVESTIGATION / Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii		Drawing content: Soundings H24 HP, PO, VP / Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com		Category: GEO / Project No. / Doc.No. / Rev.
Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 28.4.2025 / File

SOUNDINGS, H25



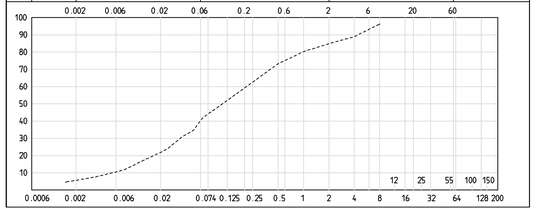
Laboratory Analysis Report

Page 1
5.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H25	21738
x	Y	Z	
7263727.033	439767.128	87.649	
Archive number	Plan number		
Customer		Analysis	

Sample ID	a	b----------			
Laboratory number	1/N05219704	2/N05219705			
Station					
Depth	1.00	2.00			
Elevation	86.65	85.65			
Sampling date (dd/mm/yyyy)	9.12.2024	9.12.2024			
Bulk density: dry, wet					
Specific gravity					
Water content %	7.2	8.2			
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	siHkMr	siHkMr			
Remoulding index %					

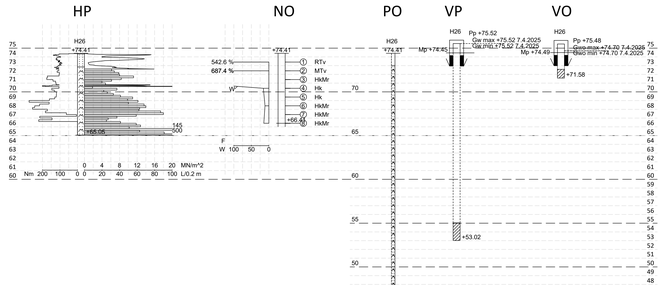
GEO	CLAY	SILT	SAND	GRAVEL	ROCKS



Comments

District	Block	Loc	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H25 HP, NO — Scale: 1:200
SITOWISE Limnéantie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025 — File

SOUNDINGS, H26



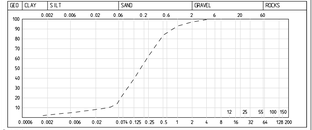
Laboratory Analysis Report

Page 1
5.3.2025

Map sheet		Point name	Point number	Project number
		URSA_Hauki	H26	21738
	x 7264165.756	y 438427.538	z 74.412	
	Archive number	Plan number		
Customer			Analysis	

Sample ID	a	b	c	d	e
Laboratory number	1/A05257003	2/A05257004	3/A05257005	4/A05257006	5/A05257007
Station					
Depth	1.00	2.00	3.00	4.00	5.00
Elevation	73.41	72.41	71.41	70.41	69.41
Sampling date (dd/mm/yyyy)	29.1.2025	29.1.2025	29.1.2025	29.1.2025	29.1.2025
Bulk density dry, wet					
Specific gravity					
Water content %	542.6	687.4		15.7	
Humus LOI NaOH %					
Frost Suspectibility	Frost-proof Non-frost-proof				
Load-bearing class					
Capillarity					
Soil type	MTv	MTv	Hk/Hr	Hk	Hk
Remoulding index %					

GEO	CLAY	SILT	SAND	GRAVEL	ROCKS
0.002	0.006	0.02	0.06	0.2	0.6	2	6	20	60



Comments

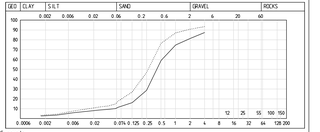
Laboratory Analysis Report

Page 2
5.3.2025

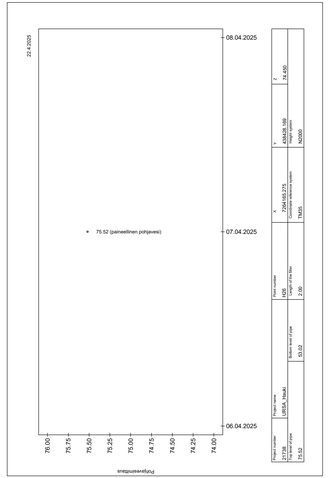
Map sheet		Point name	Point number	Project number
		URSA_Hauki	H26	21738
	x 7264165.756	y 438427.538	z 74.412	
	Archive number	Plan number		
Customer			Analysis	

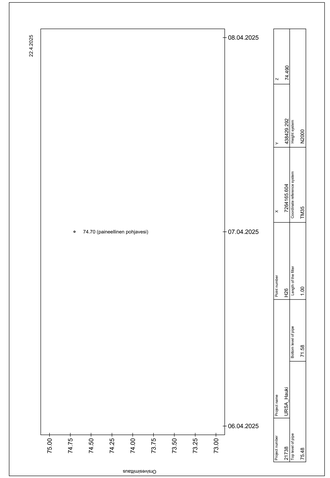
Sample ID	a	b	c	
Laboratory number	6/A05257008	7/A05257009	8/A05257010	
Station				
Depth	6.00	7.00	8.00	
Elevation	68.41	67.41	66.41	
Sampling date (dd/mm/yyyy)	29.1.2025	29.1.2025	29.1.2025	
Bulk density dry, wet				
Specific gravity				
Water content %	11.0		14.4	
Humus LOI NaOH %				
Frost Suspectibility	Frost-proof Non-frost-proof			
Load-bearing class				
Capillarity				
Soil type	Hk/Hr	Hk/Hr	Hk/Hr	
Remoulding index %				

GEO	CLAY	SILT	SAND	GRAVEL	ROCKS
0.002	0.006	0.02	0.06	0.2	0.6	2	6	20	60



Comments





District	Block	Lot	Authority identification
Building no.			Co-ordinate/height system ETRS-TM35FIN / N2000
Building action			Drawing identification GROUND INVESTIGATION
Building planned unit address Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärpölsuontie / Tuhapurontie 92150 ii			Drawing content Soundings H26 HP, NO, PO, VP, VO
			Scale 1:200

Designed by	Checked by	Approved by	Category	Project No.	Doc. No.	Rev.
Drafted by Laura Markkanen		Approved by Hannu Kemppainen	GEO			

SITOWISE
Linnoitustie 6
02600 ESPOO
029 74 1600
www.sitowise.com

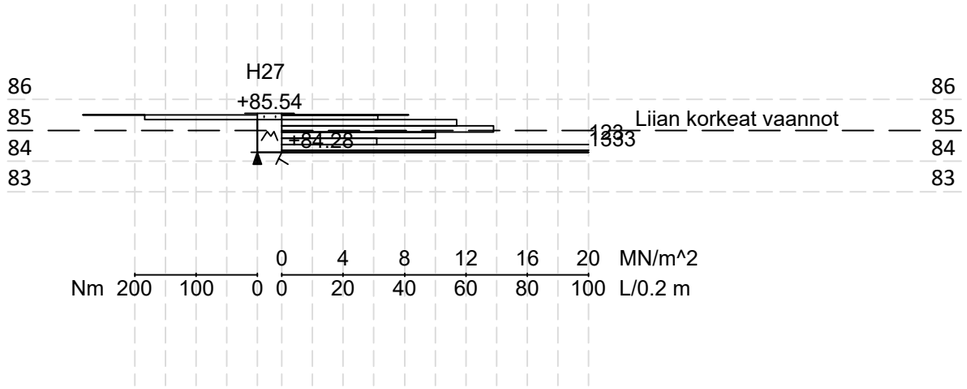
Tie number

Date
22.4.2025

File

SOUNDINGS, H27

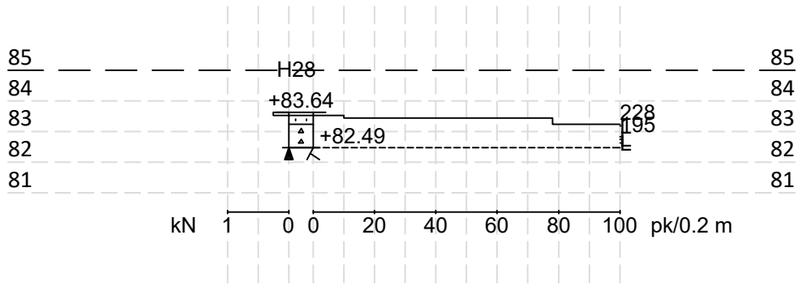
HP



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H27 HP; Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

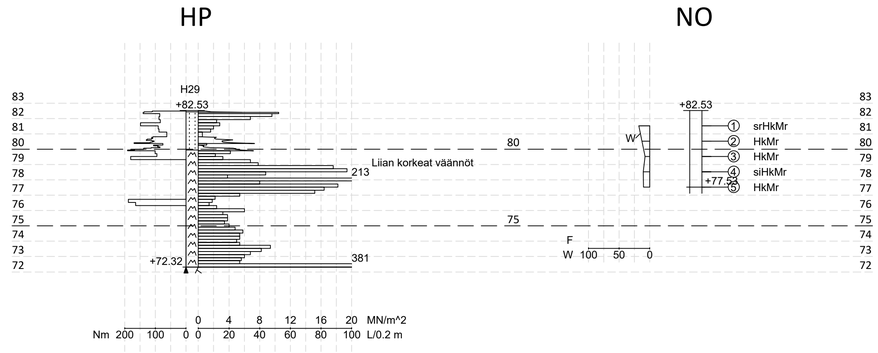
SOUNDINGS, H28

PA



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H28 PA; Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H29



Laboratory Analysis Report

Page 1
5.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H29	21738

X	Y	Z
7264052.113	439182.883	82.529

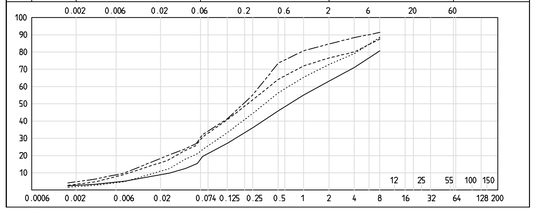
Archive number	Plan number

Customer

Analysis

Sample ID	a ———	b - - - - - - - - - -	c ·····	d	e — · — · — · —
Laboratory number	1/N05219707	2/N05219708	3/N05219709	4/N05219710	5/N05219711
Station					
Depth	1.00	2.00	3.00	4.00	5.00
Elevation	81.53	80.53	79.53	78.53	77.53
Sampling date (dd/mm/yyyy)	5.12.2024	5.12.2024	5.12.2024	5.12.2024	5.12.2024
Bulk density: dry, wet					
Specific gravity					
Water content %	17.8	12.8	7.7	10.5	10.4
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	srHkMr	HkMr	HkMr	siHkMr	HkMr
Remoulding index %					

GEO	CLAY	SILT	SAND	GRAVEL	ROCKS



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site; 65°29'32"N 25°41'01"E; Kärppäsuontie / Turhapurontie; 91150 Ii			Drawing content: Soundings H29, HP, NO — Scale: 1:200

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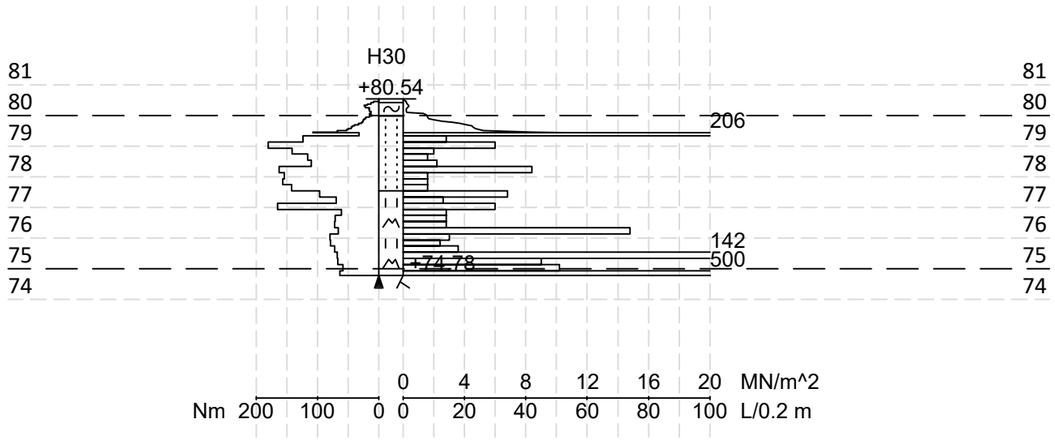
Linnoitustie 6
02600 Espoo
020 747 6000
www.sitowise.com

Category: GEO — Project No. — Doc.No. — Rev.

Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 7.2.2025 — File

SOUNDINGS, H30

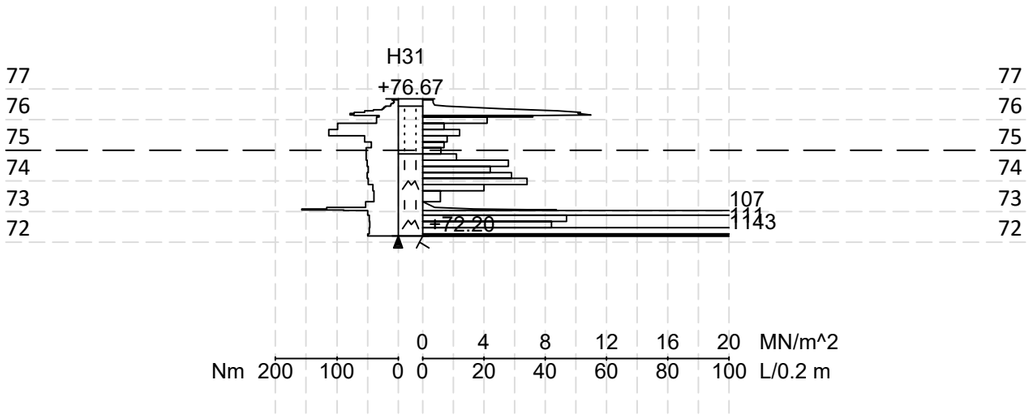
HP



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H30 HP; Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H31

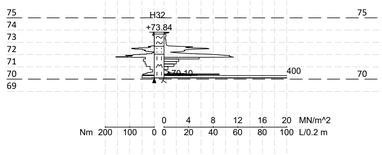
HP



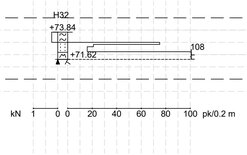
District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H31 HP — Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025 — File

SOUNDINGS, H32

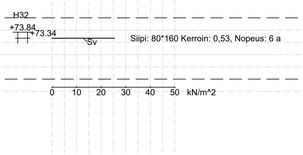
HP



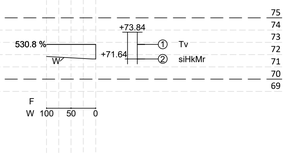
PA



SI



NO



Laboratory Analysis Report

Page 1
5.2.2025

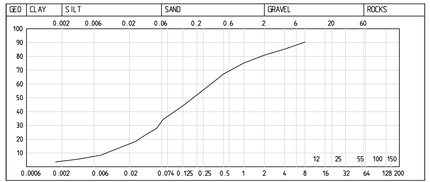
Map sheet	Point name	Point number	Project number
	URSA_Hauki	H32	21738

	X	Y	Z
	7263998.702	438247.111	73.840

	Archive number	Plan number	

Customer	Analysis

Sample ID	a	b			
Laboratory number	1/N05219713	2/N05219714			
Station					
Depth	1.00	2.20			
Elevation	72.84	71.64			
Sampling date (dd/mm/yyyy)	17.12.2024	17.12.2024			
Bulk density: dry, wet					
Specific gravity					
Water content %	530.8	7.1			
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	Tv	siHkMr			
Remoulding index %					



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site, 65°29'32"N 25°41'01"E, Kärppäsuontie / Turhapurontie, 91150 Ii			Drawing content: Soundings H32, HP, PA, SI, NO — Scale: 1:200

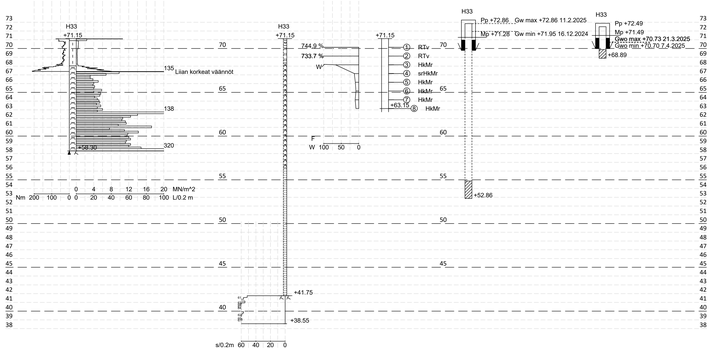
SITOWISE — Linnoitustie 6, 02600 Espoo, 020 747 6000, www.sitowise.com

Category: GEO	Project No.	Doc No.	Rev.

Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 7.2.2025 — File

SOUNDINGS, H33

HP PO NO VP VO

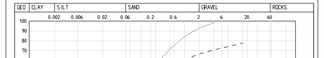


Laboratory Analysis Report

Page 1
5.3.2025

Map sheet		Point name		Point number	Project number	
		URSA_Hauki		H33	21738	
	y	x	z			
	7264399.055	438201.538	71.150			
	Archive number	Plan number				
Customer			Analysis			

Sample ID	a	b	c	d	e
Laboratory number	1/ND5257012	2/ND5257013	3/ND5257014	4/ND5257015	5/ND5257016
Station					
Depth	1.00	2.00	3.00	4.00	5.00
Elevation	70.15	69.15	68.15	67.15	66.15
Sampling date (dd/mm/yyyy)	13.12.2024	13.12.2024	13.12.2024	13.12.2024	13.12.2024
Bulk density dry, wet					
Specific gravity					
Water content %	744.9	733.7	66.0	12.8	9.7
Humus LOI NaOH %					
Frost Suspectibility	Frost-proof Non-frost-proof				
Load-bearing class					
Capillarity					
Soil type	RTv	RTv	HkMr	sr/HkM	HkMr
Remoulding index %					



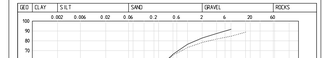
Comments

Laboratory Analysis Report

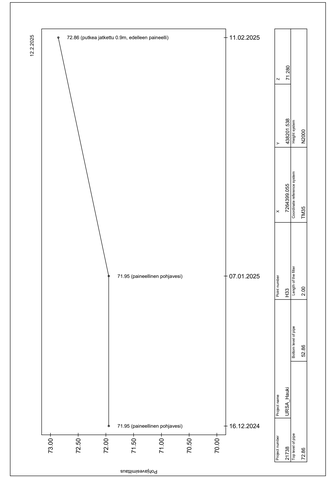
Page 2
5.3.2025

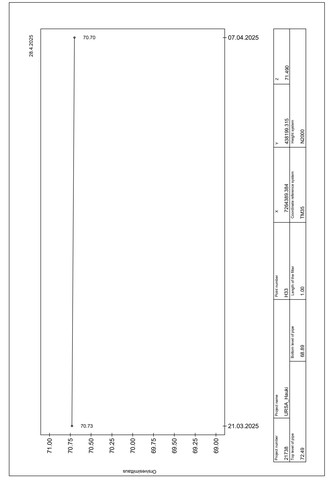
Map sheet		Point name		Point number	Project number	
		URSA_Hauki		H33	21738	
	y	x	z			
	7264399.055	438201.538	71.150			
	Archive number	Plan number				
Customer			Analysis			

Sample ID	a	b	c		
Laboratory number	6/ND5257017	7/ND5257018	8/ND5257019		
Station					
Depth	6.00	7.00	8.00		
Elevation	65.15	64.15	63.15		
Sampling date (dd/mm/yyyy)	13.12.2024	13.12.2024	13.12.2024		
Bulk density dry, wet					
Specific gravity					
Water content %	8.2	10.4	8.0		
Humus LOI NaOH %					
Frost Suspectibility	Frost-proof Non-frost-proof				
Load-bearing class					
Capillarity					
Soil type	HkMr	HkMr	HkMr		
Remoulding index %					



Comments



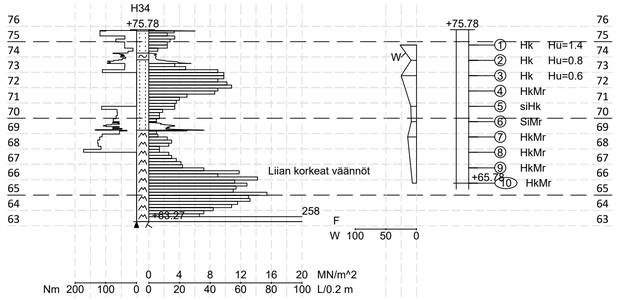


District	Block	Lot	Authority identification
Building no.			Co-ordinate/height system ETRS-TM35FIN / N2000
Building action			Drawing identification GROUND INVESTIGATION
Real property unit address			Drawing content Soundings H33 HP, PO, NO, VP, VO
Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärpöjuuontie / Tuhapurontie 91150 li			Scale 1:200

SITOWISE	Linnoitustie 6 02600 Espoo 020 747 6200 www.sitowise.com	Category GEO	Project No. Doc. No. Rev.
Developed by	Checked by	Title subtitle	
Drafted by Laura Markkanen	Approved by Hannu Kemppainen	Date 28.4.2025	File

SOUNDINGS, H34

HP NO

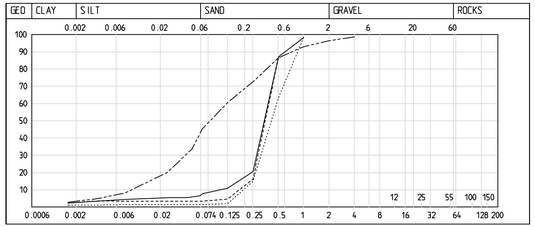


Laboratory Analysis Report

Page 1
5.3.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H34	21738
x 7264325.156	Y 438568.549	z 75.779	
Archive number	Plan number		
Customer		Analysis	

Sample ID	a	b	c	d	e
Laboratory number	1/N05257021	2/N05257022	3/N05257023	4/N05257024	5/N05257025
Station					
Depth	1.00	2.00	3.00	4.00	5.00
Elevation	74.78	73.78	72.78	71.78	70.78
Sampling date (dd/mm/yyyy)	28.1.2025	28.1.2025	28.1.2025	28.1.2025	28.1.2025
Bulk density: dry, wet					
Specific gravity					
Water content %	26.4	8.8	25.0		9.2
Humus: LOI, NaOH %	1.4	0.8	0.6		
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	Hk	Hk	Hk	HkMr	siHk
Remoulding index %					



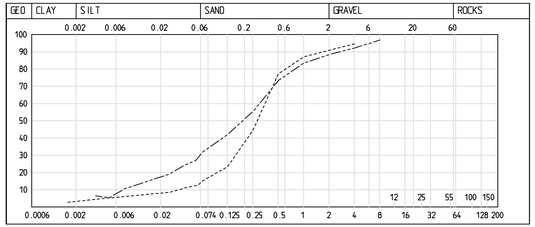
Comments

Laboratory Analysis Report

Page 2
5.3.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H34	21738
x 7264325.156	Y 438568.549	z 75.779	
Archive number	Plan number		
Customer		Analysis	

Sample ID	a	b	c	d	e
Laboratory number	6/N05257026	7/N05257027	8/N05257028	9/N05257029	10/N05257030
Station					
Depth	6.00	7.00	8.00	9.00	10.00
Elevation	69.78	68.78	67.78	66.78	65.78
Sampling date (dd/mm/yyyy)	28.1.2025	28.1.2025	28.1.2025	28.1.2025	28.1.2025
Bulk density: dry, wet					
Specific gravity					
Water content %	8.3	14.2			6.8
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	SiMr	HkMr	HkMr	HkMr	HkMr
Remoulding index %					

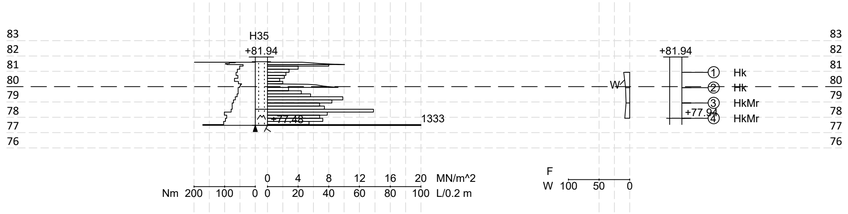


Comments

District / Block / Lot		Authority identification
Building no.		Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action		Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address	Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii	Drawing content: Soundings H34 HP, NO; Scale: 1:200
SITOWISE	Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com	Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 6.3.2025; File

SOUNDINGS, H35

HP



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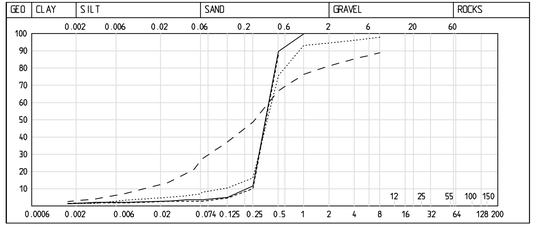
Laboratory Analysis Report

Page 1
5.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H35	21738
x	Y	z	
7264334.515	438868.900	81.938	
Archive number	Plan number		
Customer		Analysis	

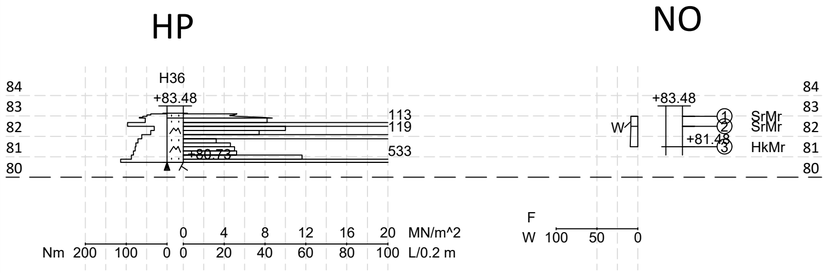
Sample ID	a ———	b ----------	c ·····	d – – – – –	
Laboratory number	1/N05219716	2/N05219717	3/N05219718	4/N05219719	
Station					
Depth	1.00	2.00	3.00	4.00	
Elevation	80.94	79.94	78.94	77.94	
Sampling date (dd/mm/yyyy)	10.12.2024	10.12.2024	10.12.2024	10.12.2024	
Bulk density: dry, wet					
Specific gravity					
Water content %	9.9	6.9	6.2	8.3	
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	Hk	Hk	HkMr	HkMr	
Remoulding index %					



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site; 65°29'32"N 25°41'01"E; Kärppäsuontie / Turhapurontie; 91150 Ii			Drawing content: Soundings H35; HP, NO — Scale: 1:200
SITOWISE — Limnéantie 6, 02600 Espoo, 020 747 6000, www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025 — File

SOUNDINGS, H36



Laboratory Analysis Report

Page 1
5.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H36	21738

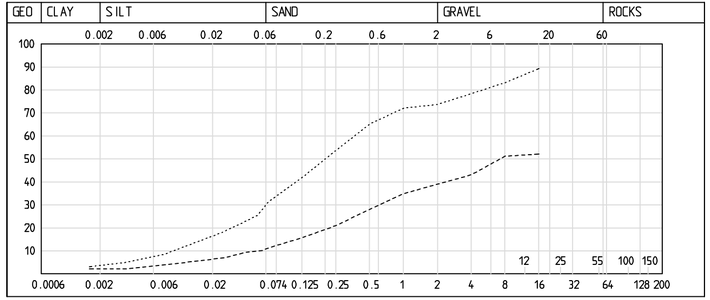
X	Y	Z
7264350.406	439165.085	83.484

Archive number	Plan number

Customer

Analysis

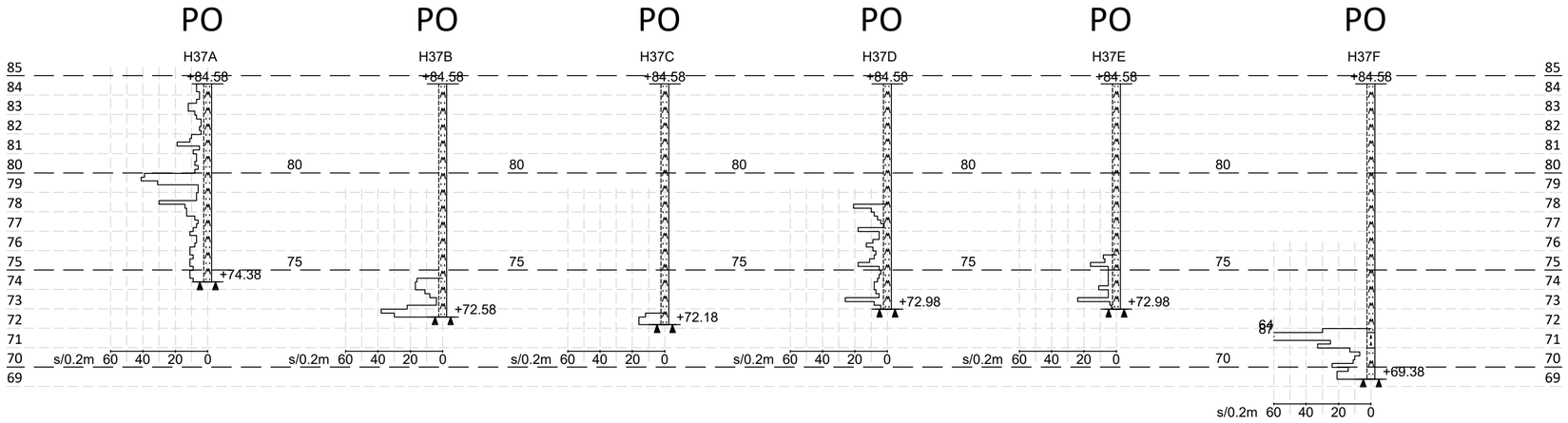
Sample ID	a	b ----------	c ----------		
Laboratory number	1/N05219721	2/N05219722	3/N05219723		
Station					
Depth	0.50	1.00	2.00		
Elevation	82.98	82.48	81.48		
Sampling date (dd/mm/yyyy)	10.12.2024	10.12.2024	10.12.2024		
Bulk density: dry, wet					
Specific gravity					
Water content %	8.8	8.6	9.7		
Humus: LOI, NaOH %					
Frost Suspectibility Frost-proof Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	SrMr	SrMr	HkMr		
Remoulding index %					



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H36 HP, NO — Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025 — File

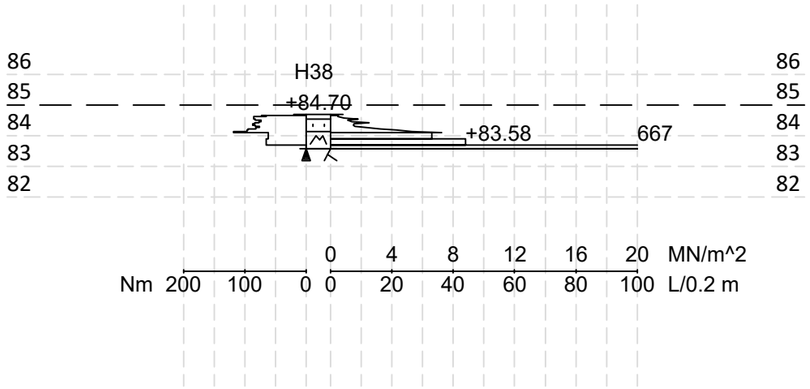
SOUNDINGS, H37



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H37 PO — Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025 — File

SOUNDINGS, H38

HP

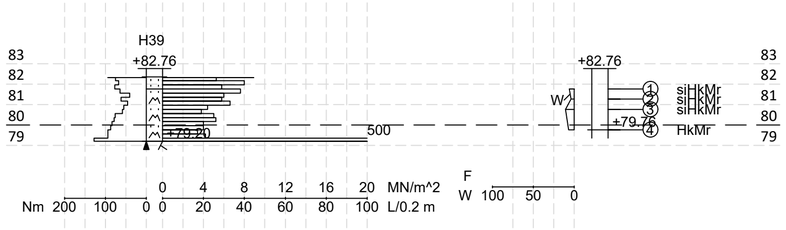


District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H38 HP; Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H39

HP

NO



Laboratory Analysis Report

Page 1
5.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H39	21738

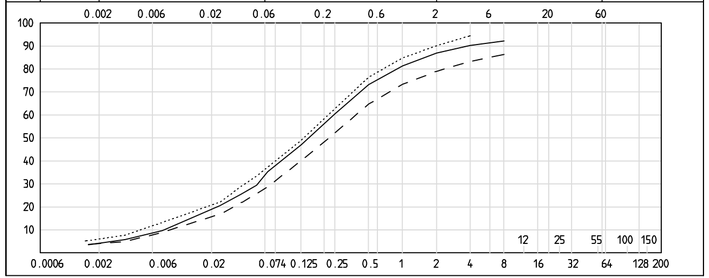
X	Y	Z
7264653.413	439154.991	82.759

Archive number	Plan number

Customer	Analysis

Sample ID	a ————	b	c ·····	d - - - - -
Laboratory number	1/NO5219725	2/NO5219726	3/NO5219727	4/NO5219728
Station				
Depth	1.00	1.50	2.00	3.00
Elevation	81.76	81.26	80.76	79.76
Sampling date (dd/mm/yyyy)	11.12.2024	11.12.2024	11.12.2024	11.12.2024
Bulk density: dry, wet				
Specific gravity				
Water content %	6.2	3.8	10.5	6.8
Humus: LOI, NaOH %				
Frost Suspectibility Frost-proof Non-frost-proof				
Load-bearing class				
Capillarity				
Soil type	siHkMr	siHkMr	siHkMr	HkMr
Remoulding index %				

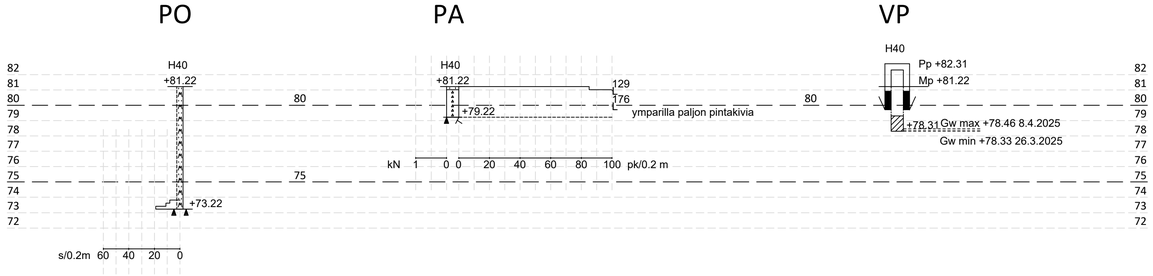
GEO | CLAY | SILT | SAND | GRAVEL | ROCKS

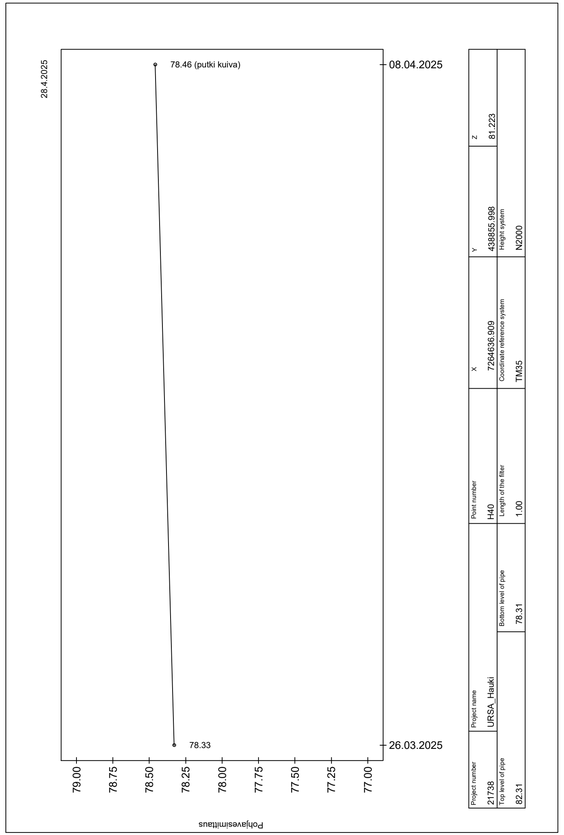


Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H39 HP, NO Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

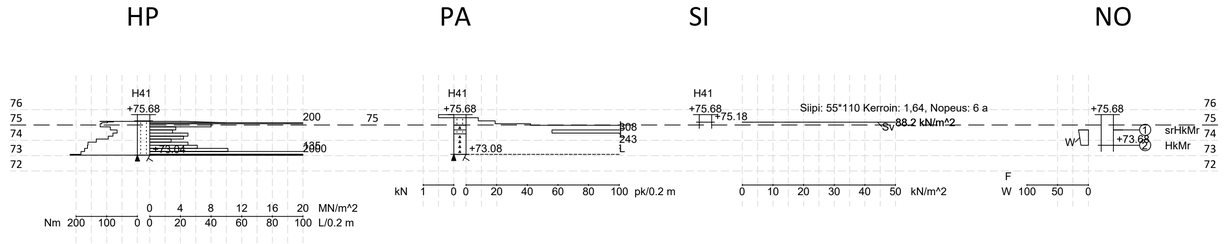
SOUNDINGS, H40





District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H40 PO, PA, VP — Scale: 1:200
SITOWISE	Limnéantie 6 02600 Espoo 020 747 6000 www.sitowise.com		Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 28.4.2025 — File

SOUNDINGS, H41



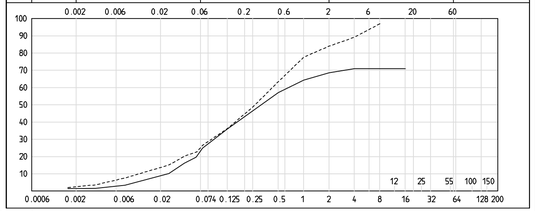
Laboratory Analysis Report

Page 1
5.2.2025

Map sheet	Point name: URSA_Hauki	Point number: H41	Project number: 21738
	X: 7264628.263	Y: 438553.772	Z: 75.677
	Archive number	Plan number	
Customer		Analysis	

Sample ID	a ————	b ----------			
Laboratory number	1/N05219730	2/N05219731			
Station					
Depth	1.00	2.00			
Elevation	74.68	73.68			
Sampling date (dd/mm/yyyy)	12.12.2024	12.12.2024			
Bulk density: dry, wet					
Specific gravity					
Water content %	15.7	12.1			
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	srHkMr	HkMr			
Remoulding index %					

GEO | CLAY | SILT | SAND | GRAVEL | ROCKS

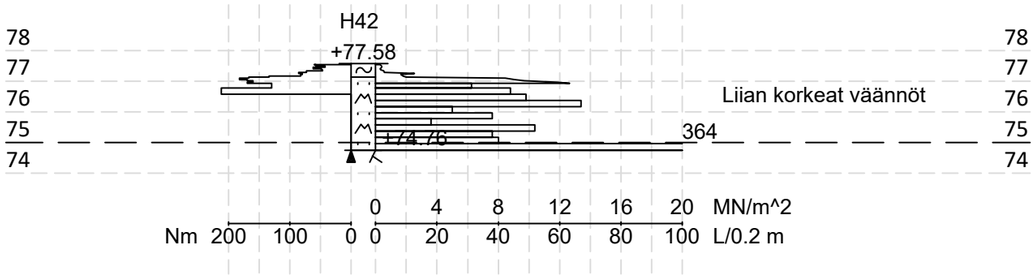


Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address			Drawing content: Soundings H41, HP, PA, SI, NO; Scale: 1:200
Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			
SITOWISE Limnéantie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H42

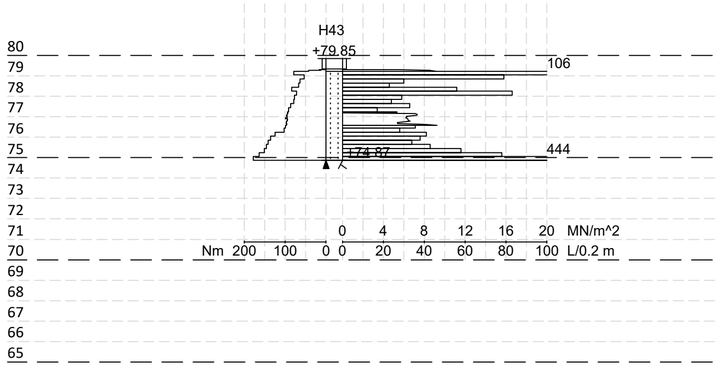
HP



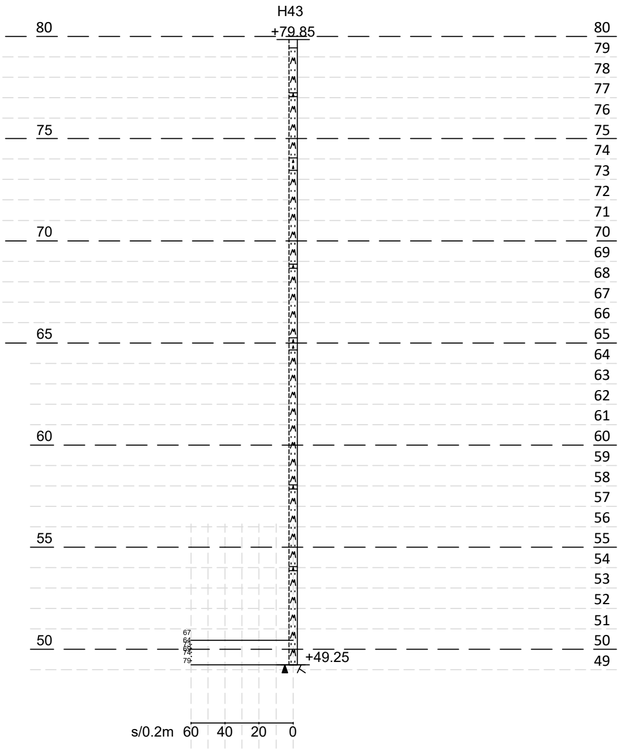
District / Block / Lot		Authority identification
Building no.		Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action		Drawing identification: GROUND INVESTIGATION / Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii		Drawing content: Soundings H42 HP / Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com		Category: GEO / Project No. / Doc.No. / Rev.
Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 7.2.2025 / File

SOUNDINGS, H43

HP

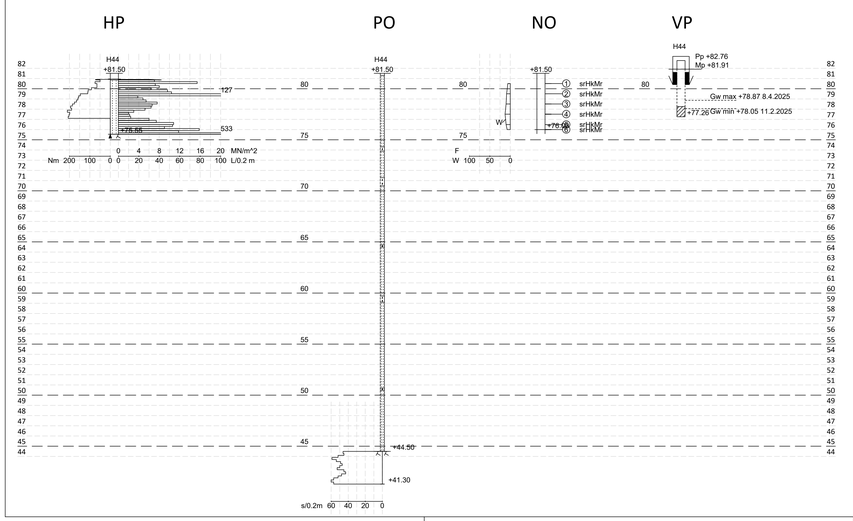


PO



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H43 HP, PO — Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025 — File

SOUNDINGS, H44

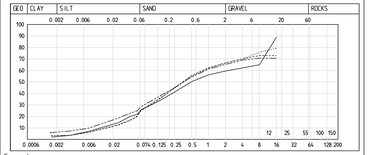


Laboratory Analysis Report

Page 1
5.2.2025

Map sheet		Point name		Point number	Project number
		URSA_Hauki		H44	21738
	x		y	z	
	7264949.343		439140.753	81.498	
	Archive number		Plan number		
Customer			Analysis		

Sample ID	a	b	c	d	e
Laboratory number	1/N05219733	2/N05219734	3/N05219735	4/N05219736	5/N05219737
Station					
Depth	1.00	2.00	3.00	4.00	5.00
Elevation	80.50	79.50	78.50	77.50	76.50
Sampling date (dd/mm/yyyy)	13.12.2024	13.12.2024	13.12.2024	13.12.2024	13.12.2024
Bulk density: dry, wet					
Specific gravity					
Water content %	6.3	9.3	10.5	12.9	10.2
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	sr HkMr	sr HkMr	sr HkMr	sr HkMr	sr HkMr
Remoulding index %					



Comments

Laboratory Analysis Report

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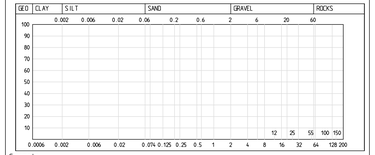
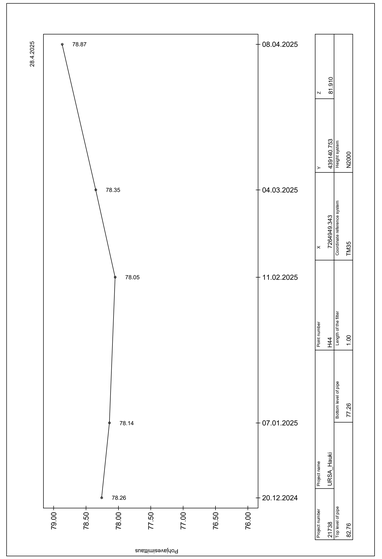
5.2.2025

Map sheet		Point name		Point number	Project number
		URSA_Hauki		H44	21738
	x		y	z	
	7264949.343		439140.753	81.498	
	Archive number		Plan number		
Customer			Analysis		

Sample ID	a				
Laboratory number	6/N05219738				
Station					
Depth	5.50				
Elevation	76.00				
Sampling date (dd/mm/yyyy)	13.12.2024				
Bulk density: dry, wet					
Specific gravity					
Water content %	7.8				
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	sr HkMr				
Remoulding index %					



Comments



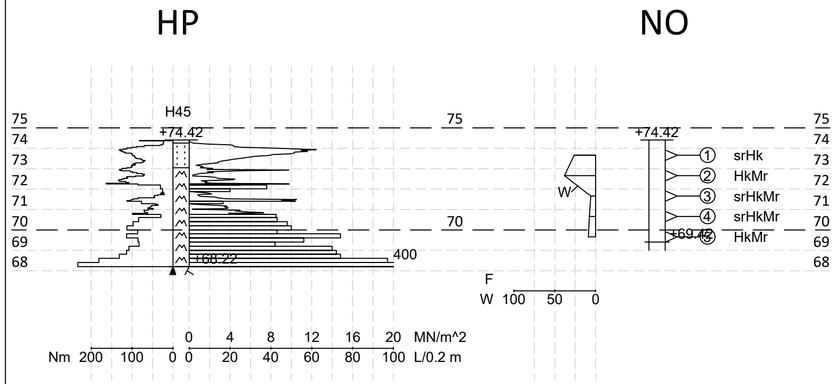
District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system ETRS-TM35FIN / N2000
Building section			Drawing identification GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site, 65°29'33"N 25°41'01"E, Kärpäsuontie / Turhapurontie, 91150 Ii			Drawing content: Soundings H44, HP, PO, NO, VP — Scale 1:200

SITOWISE — Urnoheikö 6, 02610 Espoo, +358 9 2510 0300, www.sitowise.com

Category	Project No.	Doc.No.	Rev.
GEO			

Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 28.4.2025

SOUNDINGS, H45



Laboratory Analysis Report

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Map sheet	Point name	Point number	Project number
	URSA_Hauki	H45	21738

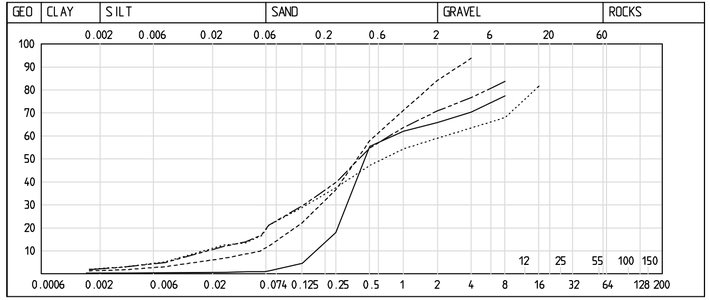
X	Y	Z
7265416.117	437995.297	74.415

Archive number	Plan number

Customer

Analysis

Sample ID	a	b	c	d	e
Laboratory number	1/N05219740	2/N05219741	3/N05219742	4/N05219743	5/N05219744
Station					
Depth	0.75	1.75	2.75	3.75	4.75
Elevation	73.67	72.67	71.67	70.67	69.67
Sampling date (dd/mm/yyyy)	12.12.2024	12.12.2024	12.12.2024	12.12.2024	12.12.2024
Bulk density: dry, wet					
Specific gravity					
Water content %	26.3	38.1	6.0	7.7	8.9
Humus: LOI, NaOH %					
Frost Suspectibility Frost-proof Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	srHk	HkMr	srHkMr	srHkMr	HkMr
Remoulding index %					



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site; 65°29'32"N 25°41'01"E; Kärppäsuontie / Turhapurontie; 91150 Ii			Drawing content: Soundings H45; HP, NO; Scale: 1:200

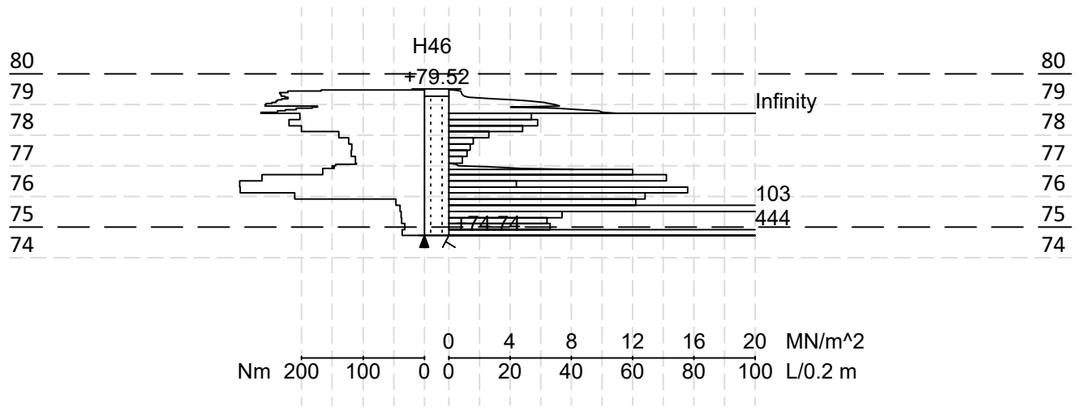
SITOWISE
Linnoitustie 6
02600 Espoo
020 747 6000
www.sitowise.com

Category	Project No.	Doc.No.	Rev.
GEO			

Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 7.2.2025; File

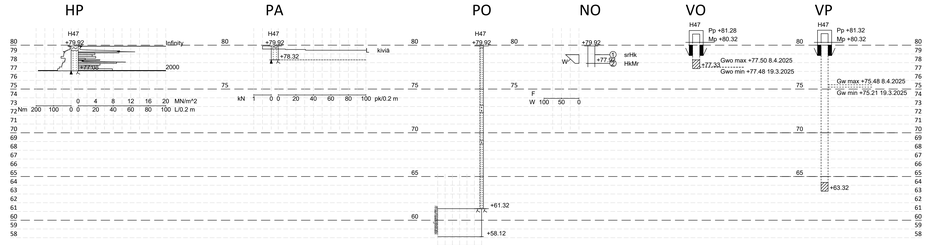
SOUNDINGS, H46

HP



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H46 HP; Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H47

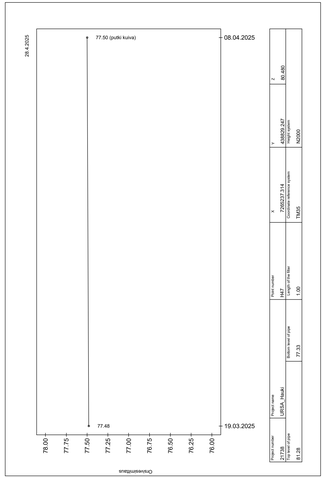


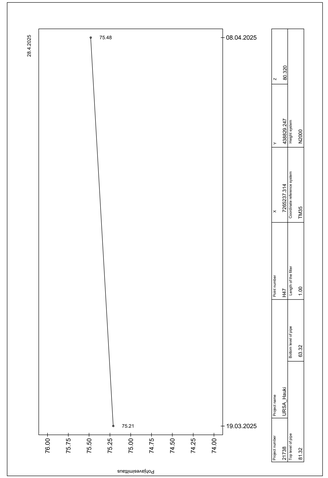
Laboratory Analysis Report

Page 1
5.2.2025

Map sheet		Point name: URSA_Hauki	Point number: H47	Project number: 21738	
	Y: 7266237.085	X: 438829.369	Z: 79.921		
	Archive number	Plan number			
Customer			Analysis		
Sample ID	a ----------	b ----------			
Laboratory number	1/MD5219746	2/MD5219747			
Station					
Depth	1.00	2.00			
Elevation	78.92	77.92			
Sampling date (dd/mm/yyyy)	15.12.2024	15.12.2024			
Bulk density dry, wet					
Specific gravity					
Water content %	38.1	11.2			
Humus (OI) NaOH %					
Frost Frost-proof Subject to frost Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	strHk	HkMr			
Remoulding index %					

Comments

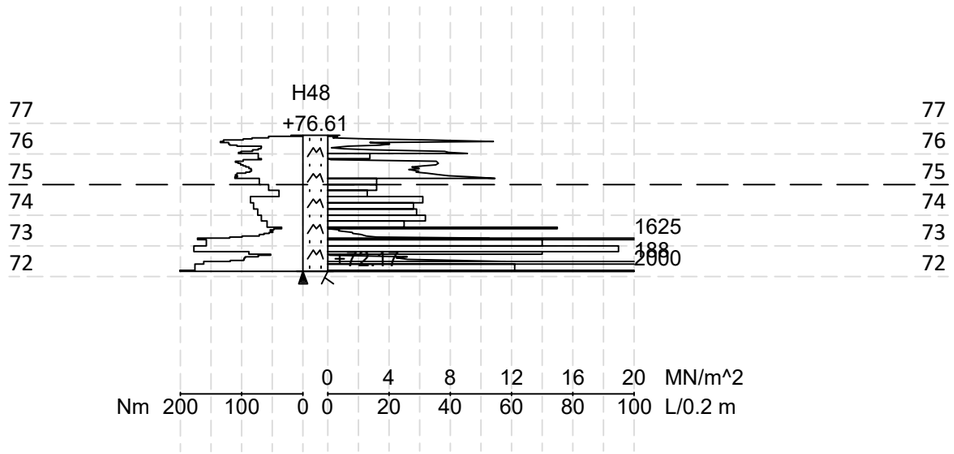




District	Block	Lot	Authority identification
Building no.			Co-ordinate/height system ETRS-TM35FIN / N2000
Building action			Drawing identification GROUND INVESTIGATION
Real-estate/land unit address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärpölsuontie / Tuhapurontie 91150 ii			Drawing content: Soundings H47 HP, PA, PO, NO, VO, VP
			Scale: 1:200
SITOWISE Ilmoituksia & Mittaustöitä OÜ 12617650 www.sitowise.com			Category GEO
			Project No.
			Doc. No.
			Rev.
Developed by	Checked by	Approved by	File number
Drafted by Laura Markkanen		Approved by Hannu Kemppainen	Date 29.4.2025

SOUNDINGS, H48

HP

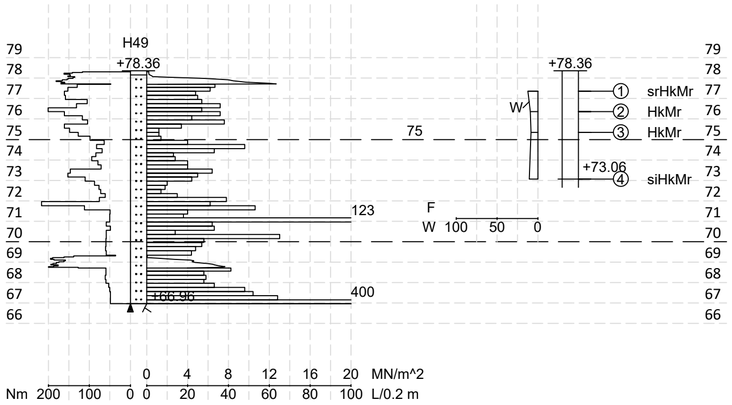


District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H48 HP; Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H49

HP

NO



Laboratory Analysis Report

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5.2.2025

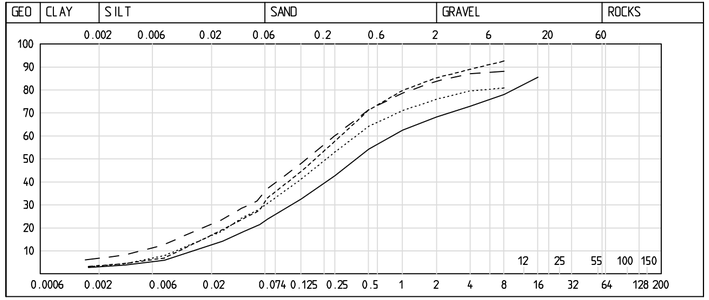
Map sheet	Point name	Point number	Project number
	URSA_Hauki	H49	21738

	X	Y	Z
	7265524.807	438515.523	78.356

	Archive number	Plan number

Customer	Analysis

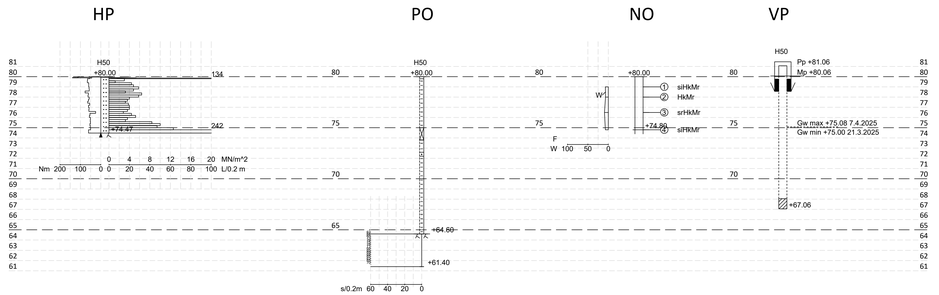
Sample ID	a ———	b - - - - - - - - - - - -	c	d - — — — -
Laboratory number	1/N05219749	2/N05219750	3/N05219751	4/N05219752
Station				
Depth	1.00	2.00	3.00	5.30
Elevation	77.36	76.36	75.36	73.06
Sampling date (dd/mm/yyyy)	17.12.2024	17.12.2024	17.12.2024	17.12.2024
Bulk density: dry, wet				
Specific gravity				
Water content %	12.1	9.2	8.4	10.5
Humus: LOI, NaOH %				
Frost Suspectibility Frost-proof Non-frost-proof				
Load-bearing class				
Capillarity				
Soil type	srHkMr	HkMr	HkMr	siHkMr
Remoulding index %				



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings H49 HP, NO Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, H50

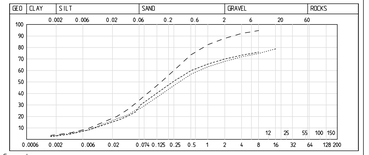


Laboratory Analysis Report

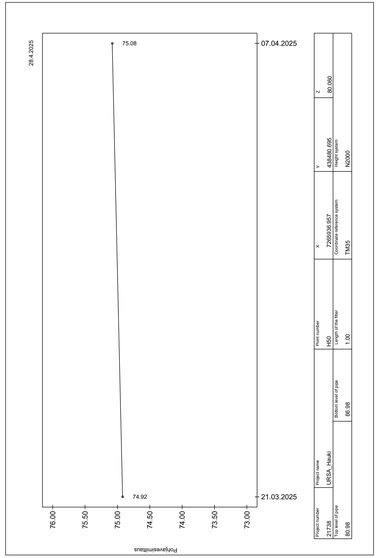
Page 1
5.2.2025

Map sheet		Point name		Point number	Project number
		URSA_Hauki		H50	21738
	X	Y		Z	
	7265936.534	438482.696		79.999	
	Archive number	Plan number			
Customer				Analysis	

Sample ID	a	b	c	d
Laboratory number	1/N05219754	2/N05219755	3/N05219756	4/N05219757
Station				
Depth	1.00	2.00	3.50	5.20
Elevation	79.00	78.00	76.50	74.80
Sampling date (dd/mm/yyyy)	17.12.2024	17.12.2024	17.12.2024	17.12.2024
Bulk density: dry, wet				
Specific gravity				
Water content %	7.1	6.8	9.3	7.0
Humus: LOI, NaOH %				
Frost Susceptibility	Frost-proof Non-frostproof			
Load-bearing class				
Capillarity				
Soil type	siHkMr	HkMr	srHkMr	siHkMr
Remoulding index %				

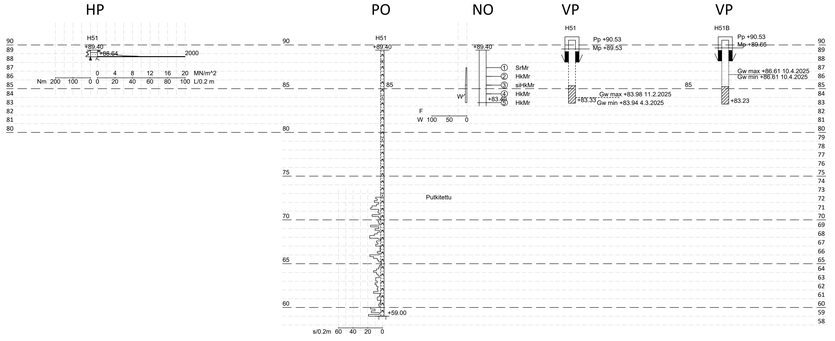


Comments



District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site, 65°29'37"N 25°41'01"E, Karppäsuontie / Turhapuontie, 91150 Ii			Drawing content: Soundings H50, HP, PO, NO, VP — Scale: 1:200
SITOWISE — Ilmoitustie 6, 02610 Espoo, +358 9 2517 0200, www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		Tiit location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 28.4.2025 — File

SOUNDINGS, H51

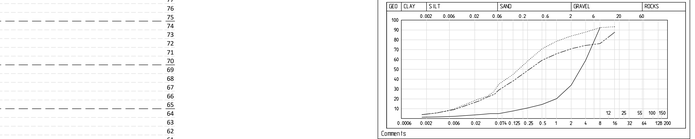


Laboratory Analysis Report

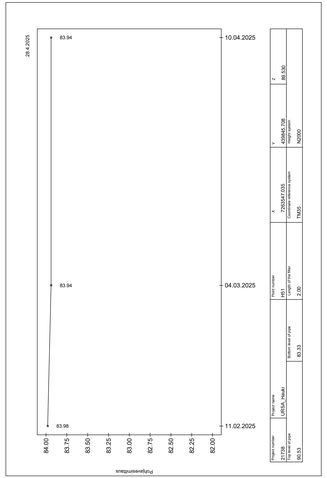
Page 1
5.3.2025

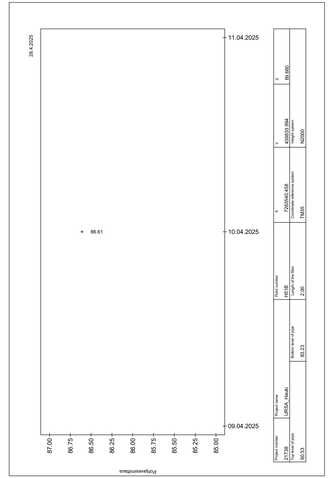
Shop sheet		Point name	Point number	Project number
		URSA, Hauki	H51	21738
	Y 7263547.035	X 439845.708	Z 89.403	
	Archive number	Plan number		
Customer			Analysis	

Sample ID	a	b	c	d	e
Laboratory number	1/ND5257032	2/ND5257033	3/ND5257034	4/ND5257035	5/ND5257036
Station					
Depth	2.00	3.00	4.00	5.00	6.00
Elevation	87.40	86.40	85.40	84.40	83.40
Sampling date (dd/mm/yyyy)	31.1.2025	31.1.2025	31.1.2025	31.1.2025	31.1.2025
Bulk density, dry, wet					
Specific gravity					
Water content %	2.6		4.2		4.0
Humus, LOI 440°C %					
Frost Frost-proof Soil specific susceptibility to frost damage					
Load-bearing class					
Capillarity					
Soil type	Sr/Hr	Hk/Hr	s i Hk/Hr	Hk/Hr	Hk/Hr
Remoulding index %					



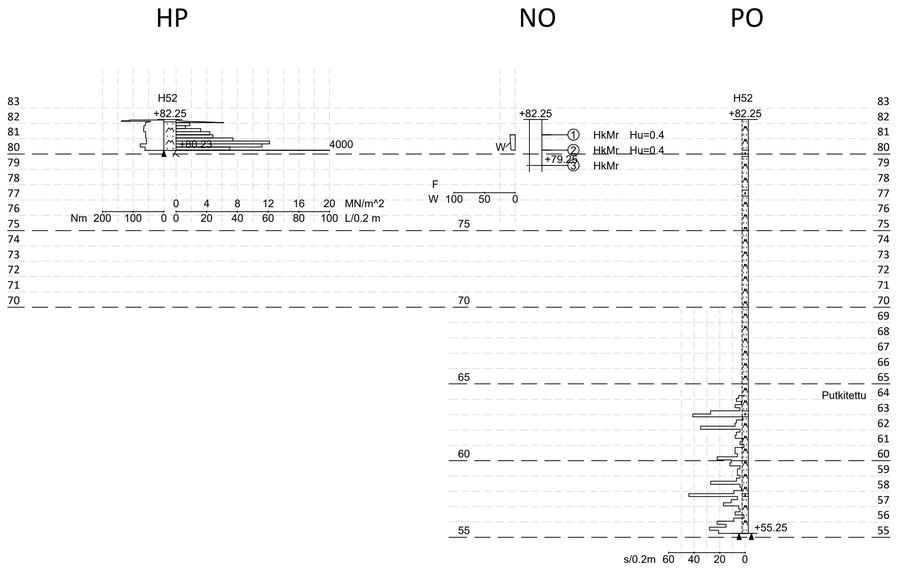
Comments





District	Block	Lot	Authority identification
Building no.			Co-ordinate/height system ETRS-TM35FIN / N2000
Building action			Drawing identification GROUND INVESTIGATION
Real-estate/land unit address Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärpölsuontie / Tuhapurontie 92150 ii			Drawing content Soundings H51 HP, PO, NO, VP, VP
			Scale 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6200 www.sitowise.com			Category GEO
Project No.			Doc. No.
Rev.			
Developed by	Checked by		Title subtitle
Drafted by Laura Markkanen	Approved by Hannu Kemppainen		Date 29.4.2025
			File

SOUNDINGS, H52



Laboratory Analysis Report

Page 1
5.3.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	H52	21738

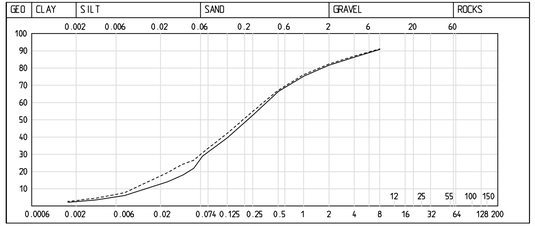
X	Y	Z
7263893.964	439038.330	82.252

Archive number	Plan number

Customer

Analysis

Sample ID	a ————	b ----------	c		
Laboratory number	1/N05257038	2/N05257039	3/N05257040		
Station					
Depth	1.00	2.00	3.00		
Elevation	81.25	80.25	79.25		
Sampling date (dd/mm/yyyy)	2.2.2025	2.2.2025	2.2.2025		
Bulk density: dry, wet					
Specific gravity					
Water content %	8.8	6.9			
Humus: LOI, NaOH %	0.4	0.4			
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	HkMr	HkMr	HkMr		
Remoulding index %					



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address			Drawing content: Soundings H52, HP, NO, PO; Scale: 1:200

Project Hauki, Herva Site
65°29'32"N 25°41'01"E
Kärppäsuontie / Turhapurontie
91150 Ii

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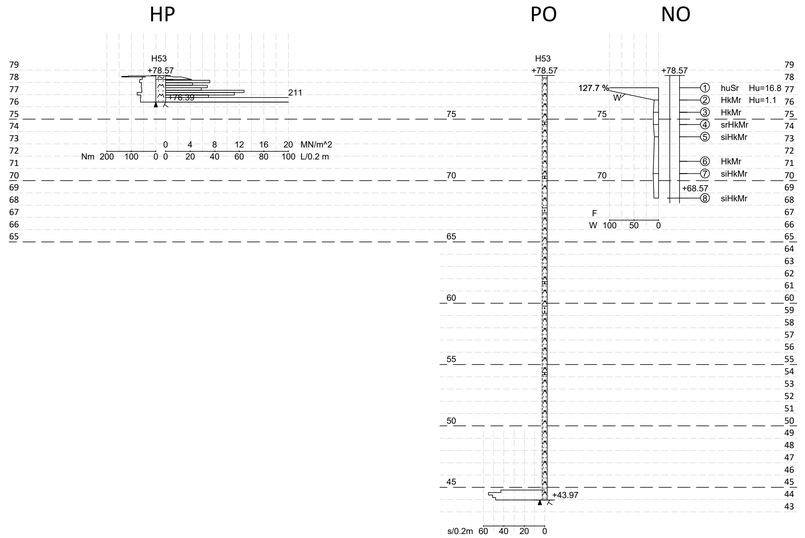
02600 Espoo
020 747 6000
www.sitowise.com

Category	Project No.	Doc.No.	Rev.
GEO			

Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 6.3.2025; File

SOUNDINGS, H53



Laboratory Analysis Report

Page 1
5.3.2025

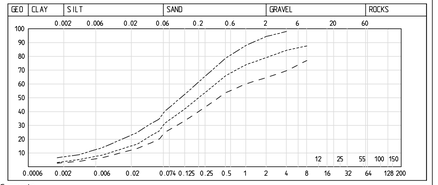
Map sheet	Point name	Point number	Project number
		H53	21738

	X	Y	Z
	7265068.864	438675.894	78.569

	Archive number	Plan number

Customer	Analysis

Sample ID	a	b	c	d	e
Laboratory number	1/N05257042	2/N05257043	3/N05257044	4/N05257045	5/N05257046
Station					
Depth	1.00	2.00	3.00	4.00	5.00
Elevation	77.57	76.57	75.57	74.57	73.57
Sampling date (dd/mm/yyyy)	17.1.2025	17.1.2025	17.1.2025	17.1.2025	17.1.2025
Bulk density: dry, wet					
Specific gravity					
Water content %	127.7	9.2	10.9	10.9	8.8
Humus: LOI, NaOH %	16.8	1.1			
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	huSr	HkMr	HkMr	srHkMr	siHkMr
Remoulding index %					



Comments

Laboratory Analysis Report

Page 2
5.3.2025

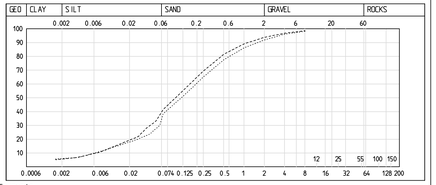
Map sheet	Point name	Point number	Project number
		H53	21738

	X	Y	Z
	7265068.864	438675.894	78.569

	Archive number	Plan number

Customer	Analysis

Sample ID	a	b	c		
Laboratory number	6/N05257047	7/N05257048	8/N05257049		
Station					
Depth	7.00	8.00	10.00		
Elevation	71.57	70.57	68.57		
Sampling date (dd/mm/yyyy)	17.1.2025	17.1.2025	17.1.2025		
Bulk density: dry, wet					
Specific gravity					
Water content %		11.1	9.4		
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof / Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	HkMr	siHkMr	siHkMr		
Remoulding index %					



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site, 65°29'32"N 25°41'01"E, Kärppäluontie / Turhapurontie, 91150 II			Drawing content: Soundings H53, HP, PO, NO — Scale: 1:200

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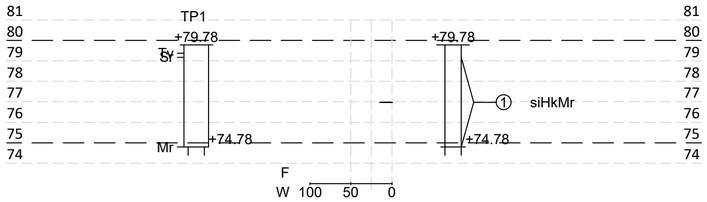
02600 Espoo
020 747 6000
www.sitowise.com

Category	Project No.	Doc No.	Rev.
GEO			

Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date: 6.3.2025 — File

SOUNDINGS, TP1

KO NO



Laboratory Analysis Report

Page 1
5.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	TP2	21738

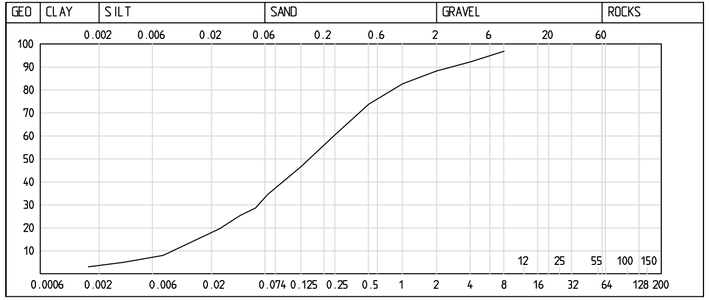
X	Y	Z
7263837.237	439504.672	84.335

Archive number	Plan number

Customer

Analysis

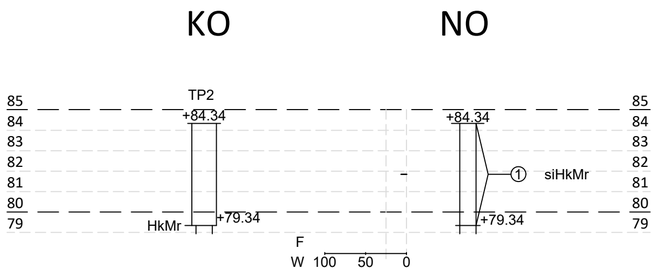
Sample ID	a				
Laboratory number	1/N05216606				
Station					
Depth	2.50				
Elevation	81.84				
Sampling date (dd/mm/yyyy)	20.11.2024				
Bulk density: dry, wet					
Specific gravity					
Water content %	6.6				
Humus: LOI, NaOH %					
Frost Suspectibility Frost-proof Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	siHkMr				
Remoulding index %					



Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings TP1 KO, NO Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, TP2



Laboratory Analysis Report

Page 1
6.2.2025

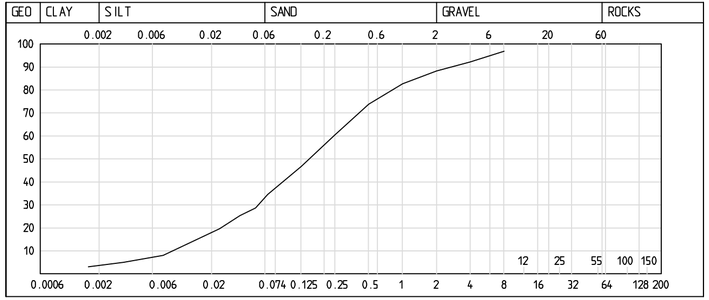
Map sheet	Point name	Point number	Project number
	URSA_Hauki	TP2	21738

	X	Y	Z
	7263837.237	439504.672	84.335

	Archive number	Plan number

Customer	Analysis

Sample ID	a ———				
Laboratory number	1/N05216606				
Station					
Depth	2.50				
Elevation	81.84				
Sampling date (dd/mm/yyyy)	20.11.2024				
Bulk density: dry, wet					
Specific gravity					
Water content %	6.6				
Humus: LOI, NaOH %					
Frost Suspectibility Frost-proof Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	siHkMr				
Remoulding index %					

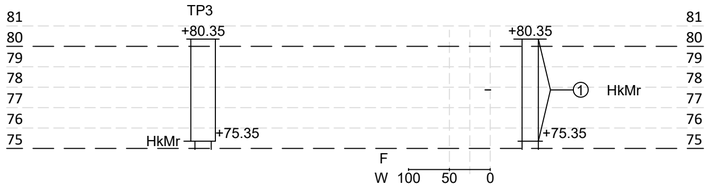


Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings TP2 KO, NO Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, TP3

KO NO



Laboratory Analysis Report

Page 1
6.2.2025

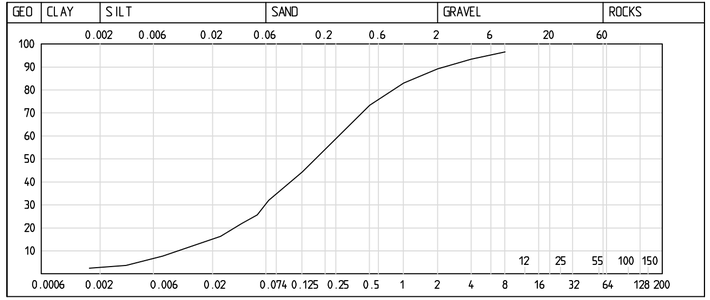
Map sheet	Point name	Point number	Project number
	URSA_Hauki	TP3	21738

	X	Y	Z
	7264073.144	438873.382	80.353

	Archive number	Plan number	

Customer	Analysis

Sample ID	a				
Laboratory number	1/N05216608				
Station					
Depth	2.50				
Elevation	77.85				
Sampling date (dd/mm/yyyy)	19.11.2024				
Bulk density: dry, wet					
Specific gravity					
Water content %	6.6				
Humus: LOI, NaOH %					
Frost Suspectibility Frost-proof Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	HkMr				
Remoulding index %					

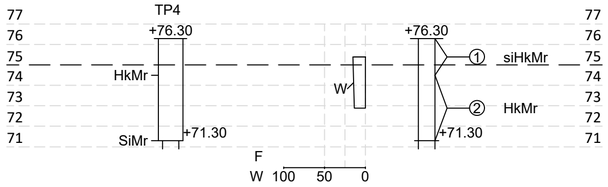


Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings TP3 KO, NO Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, TP4

KO NO



Laboratory Analysis Report

Page 1
6.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	TP4	21738

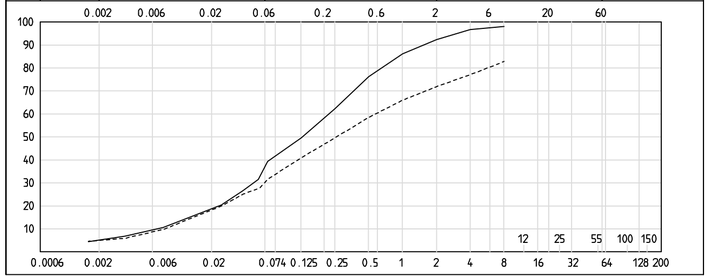
	X	Y	Z
	7264704.055	438542.838	76.295

	Archive number	Plan number	

Customer	Analysis

Sample ID	a ————	b ----------			
Laboratory number	1/NO5216610	2/NO5216611			
Station					
Depth	0.90	3.40			
Elevation	75.40	72.90			
Sampling date (dd/mm/yyyy)	19.11.2024	19.11.2024			
Bulk density: dry, wet					
Specific gravity					
Water content %	15.4	13.4			
Humus: LOI, NaOH %					
Frost Susceptibility Frost-proof Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	siHkMr	HkMr			
Remoulding index %					

GEO	CLAY	SILT	SAND	GRAVEL	ROCKS

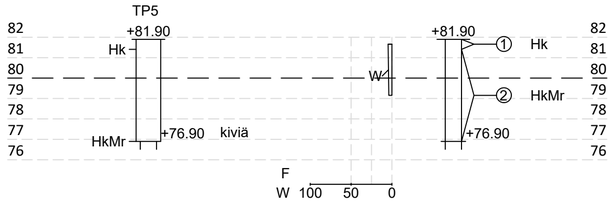


Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings TP4 KO, NO Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, TP5

KO NO



Laboratory Analysis Report

Page 1
6.2.2025

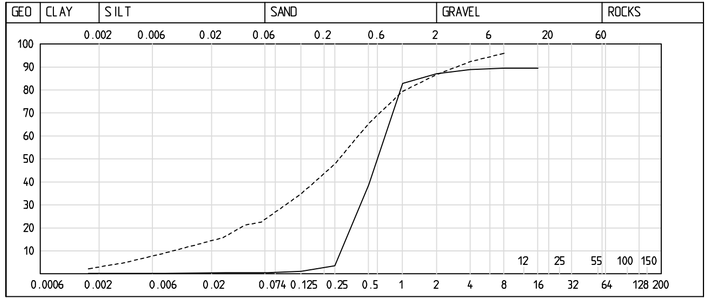
Map sheet	Point name	Point number	Project number
	URSA_Hauki	TP5	21738

	X	Y	Z	
	7264675.460	438898.197	81.903	

	Archive number	Plan number	

Customer	Analysis

Sample ID	a ————	b ----------			
Laboratory number	1/N05216613	2/N05216614			
Station					
Depth	0.25	2.75			
Elevation	81.65	79.15			
Sampling date (dd/mm/yyyy)	19.11.2024	19.11.2024			
Bulk density: dry, wet					
Specific gravity					
Water content %	4.7	4.0			
Humus: LOI, NaOH %					
Frost Suspectibility Frost-proof Non-frost-proof					
Load-bearing class					
Capillarity					
Soil type	Hk	HkMr			
Remoulding index %					

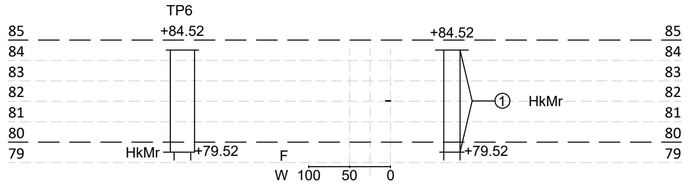


Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION — Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings TP5 KO, NO — Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO — Project No. — Doc.No. — Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025 — File

SOUNDINGS, TP6

KO NO



Laboratory Analysis Report

Page 1
6.2.2025

Map sheet	Point name	Point number	Project number
	URSA_Hauki	TP6	21738

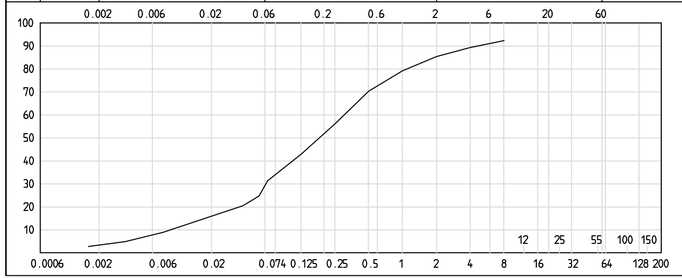
	X	Y	Z
	7264384.112	439487.422	84.517

	Archive number	Plan number	

Customer	Analysis

Sample ID	a ————					
Laboratory number	1/N05216616					
Station						
Depth	2.50					
Elevation	82.02					
Sampling date (dd/mm/yyyy)	20.11.2024					
Bulk density: dry, wet						
Specific gravity						
Water content %	6.2					
Humus: LOI, NaOH %						
Frost Suspectibility	Frost-proof Non-frost-proof					
Load-bearing class						
Capillarity						
Soil type	HkMr					
Remoulding index %						

GEO	CLAY	SILT	SAND	GRAVEL	ROCKS

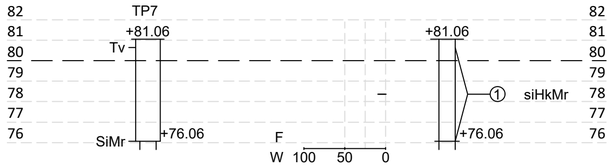


Comments

District	Block	Lot	Authority identification
Building no.			Co-ordinate/Height system: ETRS-TM35FIN / N2000
Building action			Drawing identification: GROUND INVESTIGATION; Consecutive no.
Building project and address: Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii			Drawing content: Soundings TP6 KO, NO Scale: 1:200
SITOWISE Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com			Category: GEO; Project No.; Doc.No.; Rev.
Developed by	Checked by		File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen		Date: 7.2.2025; File

SOUNDINGS, TP7

KO NO



Laboratory Analysis Report

Page 1
5.2.2025

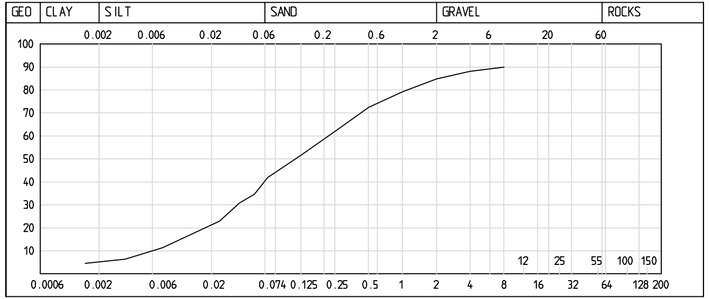
Map sheet	Point name	Point number	Project number
	URSA_Hauki	TP7	21738

	X	Y	Z
	7263401.166	438610.477	81.059

	Archive number	Plan number	

Customer	Analysis

Sample ID	a				
Laboratory number	1/N05216618				
Station					
Depth	2.70				
Elevation	78.36				
Sampling date (dd/mm/yyyy)	21.11.2024				
Bulk density: dry, wet					
Specific gravity					
Water content %	9.3				
Humus: LOI, NaOH %					
Frost Suspectibility	Frost-proof / Non-frost-proof				
Load-bearing class					
Capillarity					
Soil type	siHkMr				
Remoulding index %					



Comments

District	Block	Lot
Building no.		
Building action		
Building project and address	Project Hauki, Herva Site 65°29'32"N 25°41'01"E Kärppäsuontie / Turhapurontie 91150 Ii	
Authority identification		
Co-ordinate/Height system	ETRS-TM35FIN / N2000	
Drawing identification	GROUND INVESTIGATION	Consecutive no.
Drawing content	Soundings TP7 KO, NO	Scale 1:200
SITOWISE	Linnoitustie 6 02600 Espoo 020 747 6000 www.sitowise.com	Category GEO / Project No. / Doc.No. / Rev.
Developed by	Checked by	File location
Drafted by: Laura Markkanen	Approved by: Hannu Kemppainen	Date 7.2.2025 / File

Taratest
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WORK: 21738
5.12.2024

GEOLOGICAL MAPPING, HAUKI SITE

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Table of Contents

Introduction

According to a client's request Taratest Oy has conducted a geological mapping of the research area. The master plan area is represented in Figure 1. The main target of the geological mapping was bedrock outcrops, but because of the thick soil layer, no outcrops were found and mapping focused more on soil observations. The field mapping was conducted 14–21 November 2024.

Figure 1. *The planning area is marked on a large-scale topographical map.*

1 Applications of the geological mapping

The geological mapping aimed to gain broader understanding of the ground conditions that will be encountered during the construction works on the site. The objective is to define the properties of bedrock and soil. Soil type boundaries are the main target because of the lack of bedrock outcrops. Secondary observations about bedrock were also under interest.

2 Soil-, surface- and groundwater information

Soil types are represented in Figure 2. More than half of the map is covered by sandy till. The second most common soil type is thick peat deposits. The rest of the soil is thin peat deposits and littoral deposits. Kärppäoja ditch is the main ditch conducting research area ditch network waters into the west. A small portion of water in the Northernmost part of the research may be conducted to the Rahvalo-oja which is located North from the research area. Rahvalo-oja is flowing North-West from the research area and it starts from the Kivijärvi. The groundwater surface varies a lot in the research area. All research area waters are finally flowing to the Olhavanjoki-river. In the peat deposits or ditch network areas the ground water level is near surface. The ground water level in the sandy till and sand areas are below 3-5 m level according to trial pit results.

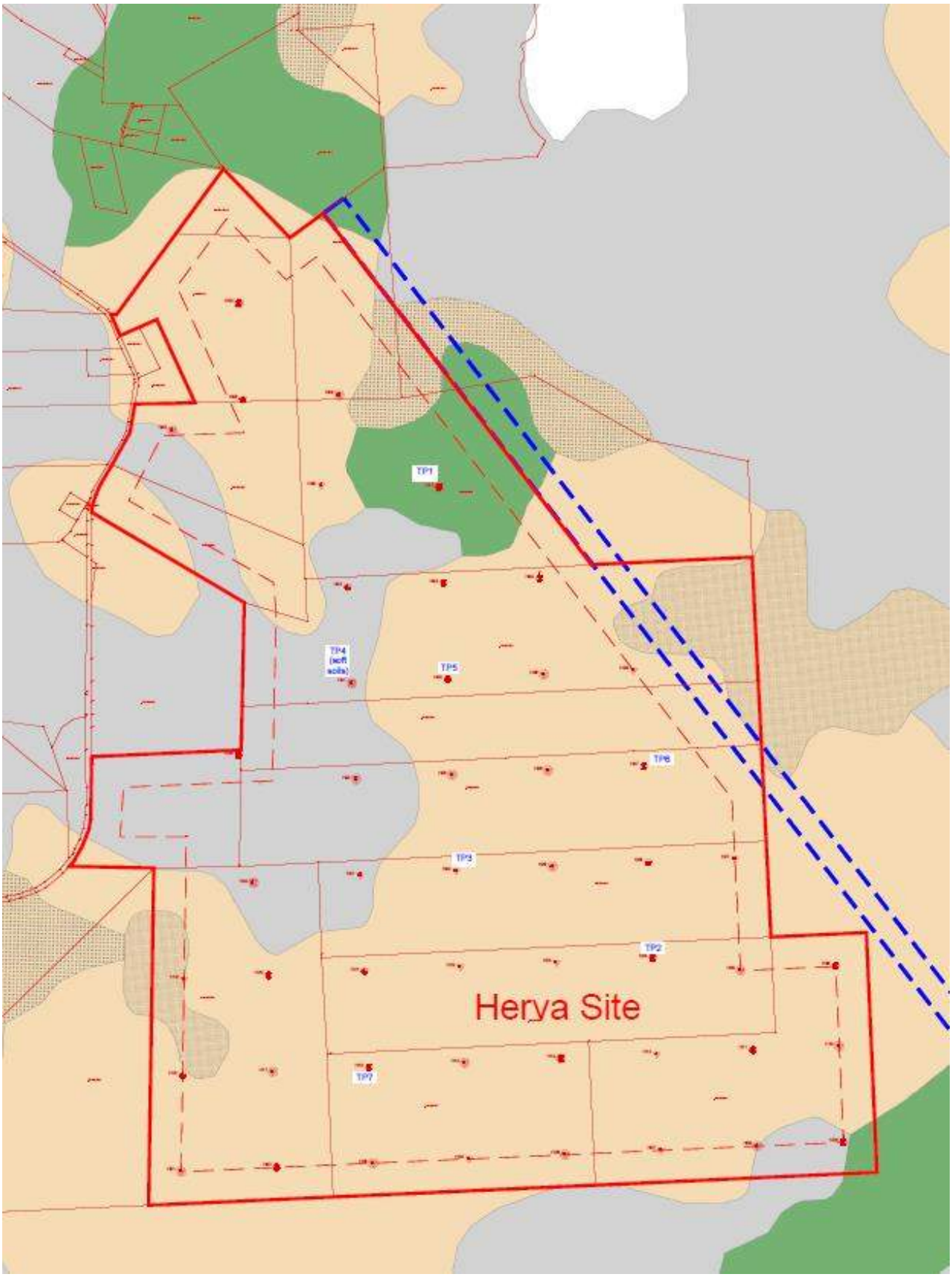


Figure 2. *Geological Survey of Finland soil map. Grey areas are thick peat deposits, light brown areas sandy till, green littoral deposits and hatched light brown thin peat deposits. The trial pits are also marked on the map.*

3 Materials

3.1 Literature

Suomen kallioperä – 3000 vuosi-miljoonaa, 1998 -book was the primary literature source for bedrock geology. GTK -Geological Unit Reports were also used as a source for bedrock geology. GTK Maankamara https://gtkdata.gtk.fi/maankamara/ was the main source of the information for the soil mapping.

4 Overall bedrock geology

The research area bedrock is part of the Pudasjärvi Archean complex. The Pudasjärvi complex consists mainly of diverse migmatitic tonalitic gneisses and minor amphibolites, which are the most common rock types in the Olhava suite (research area). Abuntant intrusive rocks are grouped to the Tannila (6 km East from the research area) and Arppee suites (25 km Northwest from the research area). Tainivaara suite consists of migmatitic paragneisses (35 km North from the research area). The Pudasjärvi complex is poorly known because the lack of bedrock outcrops. Early Proterozoic granites and diabases are sharply cutting Pudasjärvi Archean complex rocks.

5 Geological bedrock mapping

The site walk was carried out on 14.11.2024 together with the soil mapping. No bedrock outcrops were discovered in the research area. This is the reason why all bedrock observations are secondary and made from the soil. The site walk observation areas are marked on the research map (Appendix 1). From the GTK soil thickness map can be seen that the soil layer is estimated to be 10 m thick in the research area. All the soil in Finland is transported by glaciers. The ice flow direction is important to notice when doing observations from the till. The till usually travels some hundred meters to some kilometers from the original outcrop. In the research area ice flow direction have been from the Northwest (Figure 3).

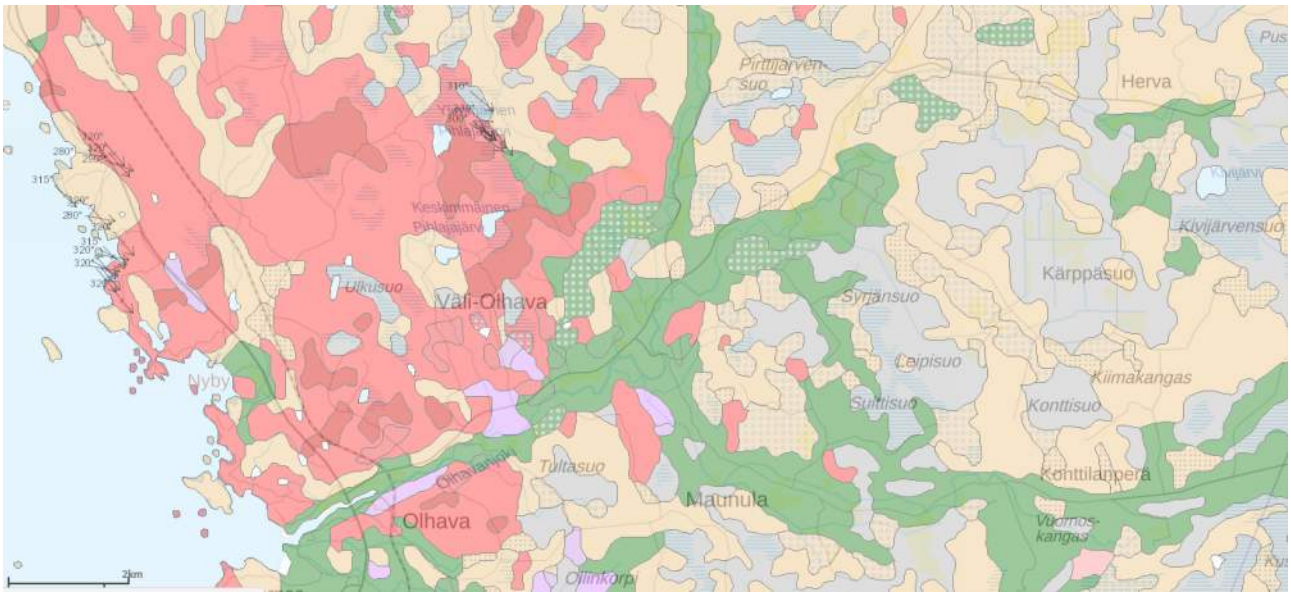


Figure 3. GTK ice flow directions in the Olhava region.

The main rock types of the mapped area (Figure 4) are migmatitic and tonalitic gneisses. Intrusive rocks, mainly diabases are abundant. In the following chapters, each rock type is described using both literature and field observations.

Figure 4. *Caption from bedrock map, Geological Survey of Finland (GTK). (captured 25.11.2024). Light brown area (whole area) represents migmatitic tonalite and brown lines are diabase veins. The description mentions that the brown line down in the left corner might also contain gabro.*

5.1 Migmatitic and tonalitic gneisses

Migmatitic and tonalitic gneisses (Figure 4, Area 1) form the base of the research area and are Archean in age according to literature. The samples from moraine show slightly-moderately banded textures but also tonalitic or granitic compositions without remarkable schistosity. Quartz veins are sometimes cutting the gneiss and some quarts rocks can be found sparsely (Figure 5, Area 1) (massive quartz occurs as veins in gneisses).

The Archean base is a former granitoid complex, which has metamorphosed with different degrees. The difference between granite and tonalite is that there are only small amounts alkali feldspar in tonalite. That is why area rocks are more likely white in color (tonalite) than red (granite). The principal minerals in tonalite are plagioclase, quartz and mica (sometimes hornblende) and in granite same but with more alkali feldspar. The reason why all these rock types are under discussion in this same chapter is that the rock types are most probably from the same origin, meaning that the degree of metamorphism has altered a lot in the research area, making the bedrock very heterogeneous. That is probably why GTK is calling the rocks with a complex name “migmatitic and tonalitic gneisses”. What comes to ice flow direction, the nearest other bedrock complexes

are 25 km away from the research area, so it is reasonable to believe that rocks in the till are from the Olhava suite.

Figure 5. *Tonalitic gneiss sample from moraine. Both neosome and leucosome (tonalitic) are visible.*

Figure 6. *Quartz sample from moraine.*

5.2 Diabase

Diabase (Figure 7, Area 1) is younger than tonalitic gneiss, from the Proterozoic era. Diabase dykes are interpreted from magnetic data, and they are approximately 5-50 m wide. Diabase dykes have intruded into the tonalitic gneiss. Diabase is fine-medium grained. The principal minerals are feldspar (plagioclase), hornblende and pyroxenes. Diabase is massive in texture.

Figure 7. *Diabase rocks are also found from the moraine.*

5.3 Granite

Quite many granite rocks were found from the research area (Figure 8, Area 3). Granite could be from independent small granite complexes or most probably just having slight composition difference compared to tonalitic origin rocks. Rock type boundaries could be hard to distinguish because of the locality of abundance.

Figure 8. *Granite sample from the research area.*

5.4 Gravel pits

As an objective, it was asked to visit economical scale gravel pits (Figure 9, 10) South from the site area. There were three pits and two of those were active. All pits were processing sand-gravel-boulder sized materials. The main idea was to find bedrock, because the pits are estimated to be 10-15 m deep in the deepest points. However, the bedrock was not exposed to the pits. Konttikangas area gravel pits (two of the pits were in the Konttikangas area) are located 1,4 km S-E from the site area and that is the glacier ice flow direction. The rock types are however the same in the site area. Maybe more tonalitic and granitic material than at the site, but not with the big difference.

Figure 9. Konttikangas gravel pit.

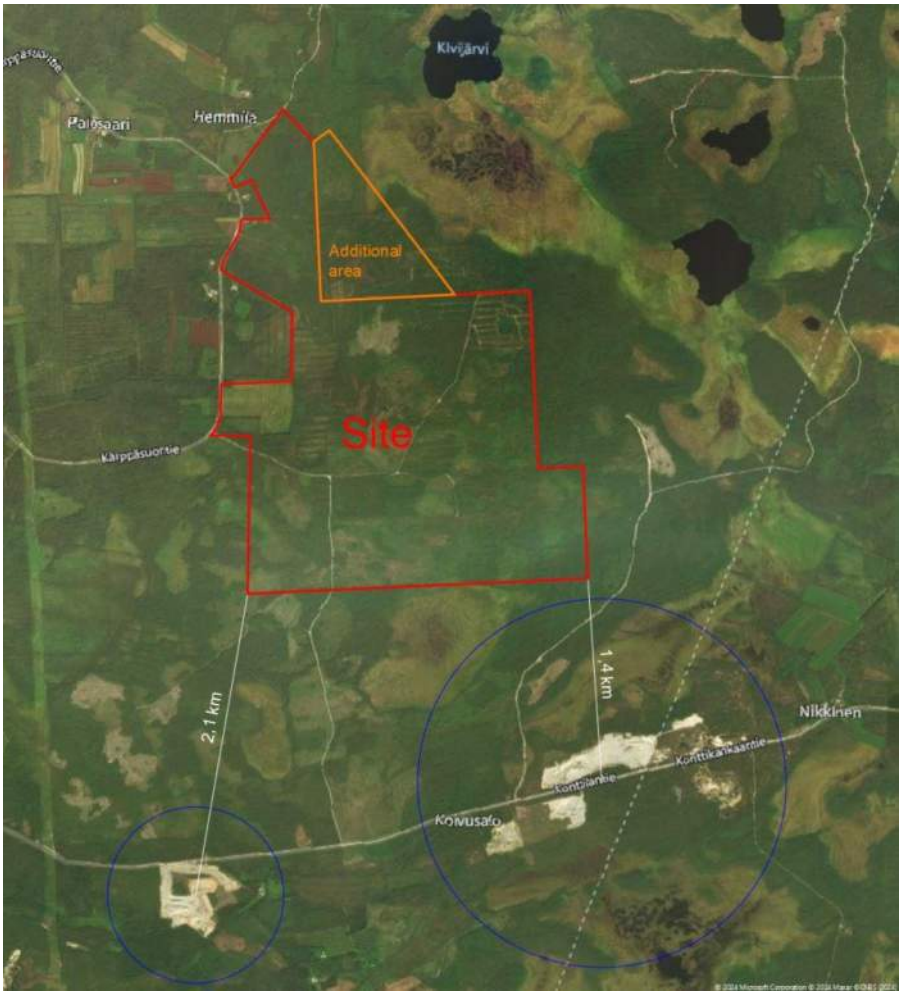


Figure 10. Gravel pit locations. Konttikangas pits on the East side.

6 Possible shear zones

Because the research area is fully covered with soil, interpretation of possible shear zones cannot be illustrated.

7 Geological soil mapping

The objective of the soil mapping was to confirm the soil map and make corrections if needed.

7.1 Soil mapping site walk

Because of the becoming winter, there was only one working day left for a site walk before heavy snowfall. The site walk was carried out on 14.11.2024.

The site walk started from the Southeast corner of the site map. The first objective was to confirm the existence of the sandy till. A coarse-grained sandy till was exposed in many places near the drilling point H17 (Figure 11, Area 1). Sandy till contains approximately 50% sand, 30% gravel and 20% boulders. This can of course vary a lot. Biggest boulders are usually 1-2 m in diameter. The sandy till grains are mostly rounded. There was a W-E oriented ridge a little bit North from the drilling points H01 and H02 which showed characteristics of a paleoshoreline (Area 2). The till's finest material is probably washed away in this area. Nearby drilling points H18, H19 and H17 the vegetation and water conditions are noticeable sensitive to ground level changes or changes in till composition. A fine-grained till is not letting water through, when swamp vegetation and wet conditions are formed.

Figure 11. *Sandy till is exposed to the edge of the drainage ditch.*

Figure 12. *The probable paleoshoreline area shows undulating formations (shoreline sand or sorted sandy till) around the ridge.*

Most of the research area consists of sandy till (Figure 12). When driving on the smallest roads in the site area, most of the time sandy till can be seen in the ditches (Figure 13, Area 9). Large areas of sandy till are exposed to the surface in the power line construction works Eastern side of the research area (Figure 14, Area 5).

Figure 13. *Sandy till in the power line construction site.*

Figure 14. *Sandy till is exposed widely to ditch walls.*

The next target was to make observations about the soil maps green area, littoral deposit of unknown coarse material. The coarse material was defined as coarse sand (Figure 15, Area 6). The sand was well rounded and sorted. During the site walk, the following observations were made; there is a sharp contact between the sandy till and the littoral deposit coarse sand both in the Southern part of the deposit and sharp contact in the North, but sand is contacted in the North with a thin peat deposit. In S-N direction the dimensions of the littoral deposit are about the same as in the soil map. However, the Western border of the littoral deposit sand seems to be far more in the East than is marked on the map. A Littoral deposit in the West end up in the swamp like vegetation when the ground level drops.

Figure 15. *Coarse sand is widely exposed to the power line construction site.*

The thin peat deposit which is located mainly East of the power line was visited near the end of the site road. The peat deposit was exposed because of heavy forest machinery (Figure 16, Area 4) and is located approximately where it is on the soil map.

Figure 16. *Coarse sand is widely exposed to the power line construction site.*

The next target was “the pond”, marked on the site map (Area 8). The pond seems to be an old sand pit (Figure 17). The surrounding area is left without bigger rocks (bigger rocks are common in the sandy till) and undulating surface with 50-150 m offset from the pit. This means that the sand area is estimated to be 200-300 m wide, about circular fine-medium grained sand deposit, probably littoral in origin. The sand is well rounded and sorted. The thickness of the sand in the pond is at least 3,5 meters and the sand deposit is probably getting thinner towards the deposit boarders. The former digging probably stopped because reaching the ground water level after 3-3,5 m. These sand observations are marked to the soil map. The sand observation relates to TP5 surface layer sand. The drillings will tell more accurate information about the extent of the sand layer.

Figure 17. *Figure from the "pond". Fine-medium grained sand is exposed to the pit walls.*

7.2 Trial pits

The trial pits were planned by Sitowise Oy. The plan contained 7 pits in total and the trial pits are marked on the research map. The objective was to dig 5 m deep trial pits and take 10 l samples for Proctor-tests from every significant soil type layer. Another purpose for the pits were to make observations about geology for this study. The trial pits were excavated with a 25-t excavator. A 4 m long level rod was used as a scale in the pits. The trial pit sampling reports can be found from Appendix 2.

7.3 TP1

The first trial pit was planned for the littoral deposit area. During the geological site walk, littoral deposits were mapped near the powerline area and clear-felled area (coarse sand). It was estimated that littoral deposits are bordered by ditches 50-100 m West from the clear-felled area. The estimation was proved to be right, because in the TP1 pit only 0,4-0,6 m gravel layer was found (Figure 18). The soil consisted of a 40 cm peat layer at the top, 20 cm gravel layer and mainly sandy till. The coarse sand layer seems to be elevation sensitive according to field observations. When ground elevation rises after N-S oriented ditches to the west again, it is unclear if the littoral deposits (coarse sand) are again present, but they are marked in the research map.

Figure 18. TP1 0-4 m peat, 0,4-0,6 m gravel, 0,6-5 m sandy till.

7.4 TP2

The TP2 pit confirms the soil map (Figure 19). The only soil layer is dry sandy till all the way to 5 m.

Figure 19. TP2 sandy till.

7.5 TP3

The TP3 pit confirms the soil map (Figure 20). The only soil layer is dry sandy till all the way to 5 m.

Figure 20. TP3 sandy till.

7.6 TP4

The TP4 pit was supposed to be located on a thick peat deposit, but surprisingly, the peat deposit was practically non-existent (Figure 21). The vegetation in the area was typical of swamps. The first soil layer was (0-1,8 m) sandy till. Then the moraine material changed to a more fine-grained silt/clay containing moraine. The surface water was flowing into the pit from the beginning, but groundwater started flowing in from 1,5 m. It is unclear where the peat layer is getting thicker, but the soil maps thick peat deposit is narrower than previously thought.

Figure 21. TP4 sandy till 0-1,8 m, silty till 1,8-5 m.

7.7 TP5

The TP5 (Figure 22) pit shows sand in the top layer, which might be interconnected with the pond area observations. The sand layer is only 0,5 m thick with sharp contact to the sandy till layer. The pond area littoral deposit sand might therefore be wider than during the site walk was estimated.

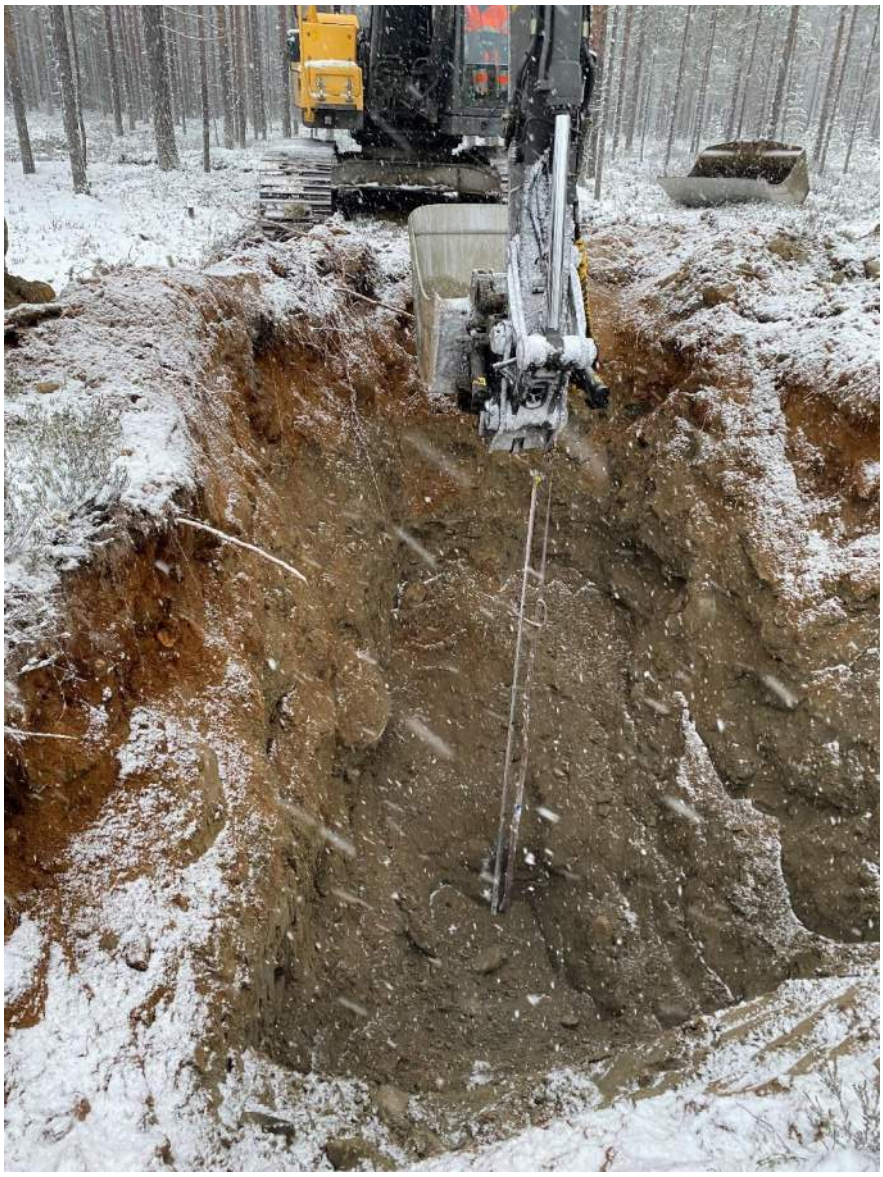


Figure 22. TP5 top layer consist of sand. Sandy till from 0.5 m.

7.8 TP6

The TP3 (Figure 23) pit confirms the soil map. The only soil layer is dry sandy till all the way to 5 m.

Figure 23. TP6 sandy till.

7.9 TP7

The TP7 area looked like a swamp with a lot of surface water on the ground. The peat layer was almost non-existent here (Figure 24), but fine-grained material containing silty till was not letting the water through and therefore forming swamp. In the soil map, the TP7 area is marked as a sandy till, but according to field observations there is an area of unknown size silty till.

Figure 24. TP7 silty moraine.

8 Conclusions and summary

The geological bedrock mapping showed absence of bedrock outcrops. The bedrock consists mainly of migmatitic and tonalitic Archean gneiss with large potions of tonalitic and granitic material and some diabase dykes according to secondary observations from the research area and literature. The soil is at least 5 m thick and therefore in more important role when building.

The GTK soil map is not accurate, which is not surprising, because it is a general level information source. The sand and thick peat deposits are the ones that differ the most from the GTK soil map. The changes in the soil map are represented in the research map (Appendix 1). It is important to notice that all observations were done by visual inspection and therefore the soil map is still inaccurate. Also, heavy snowfall was limiting the time to make observations from the ground, but the trial pitting was giving more information about the soil after snowfall.

All the soil can be excavated. The bedrock is most probably hard and durable and therefore must be exploded if any underground cavities are planned to be built. However, it is impossible to make any kind of observations about fracture zones at this point. Bedrock must be drilled or exposed to make conclusions about fracture zones.

TARATEST OY

5.12.2024

Otso Sattilainen, MSc., Geologist

Appendix 1. Research map

Appendix 2. Trial pit sampling reports

Research map
-Geological mapping

Trial pit coordinates ETRS-TM35, N2000:

TP1	7265266.459	438806.430	79.782
TP2	7263837.237	439504.672	84.335
TP3	7264073.144	438873.382	80.353
TP4	7264704.055	438542.838	76.295
TP5	7264675.460	438898.197	81.903
TP6	7264384.112	439487.422	84.517
TP7	7263401.166	438610.477	81.059

Kivijärvi
77.6

Kivijärvensuo

Rahvalos

Rahvalaskanga

Herva Site

Thick peat deposit

7.
Thin peat deposit

Sandy till

Sand

6.
TP1 +79.78

5.
Thin peat deposit

Sandy till

4.
Thin peat deposit

TP4 +76.30

TP5 +81.90

TP6 +84.52

Sand

8.

Sandy till

Thick peat deposit

TP3 +80.35

Sandy till

TP2 +84.33

3.
Thin peat deposit

9.

1.

TP7 +81.06

Silty till

Sandy till

Sandy till

2.

Thick peat deposit

Iso Komissuo

3. Observation area

TP5 +81.90 Trial pit

KAUP.OSA/KYLÄ	KORTTELITILA	TONTTI/Rno	VIRANOMAISTEN ARKISTOMERKINTÖJÄ VARTEN	
MAKINAUSTOIMENPIDE			PIIRUSTUSLAJI: YMP	
MAKINAUSKOHTEEN NIMI JA OSOITE: URSA, project Hauki			PIIRUSTUKSEN SISÄLTÖ: Research map, geological mapping	1:1500
Taratest Turirata 9 A 33960 Pirala 03-368 3322 taratest@taratest.fi			SUUNN. OS	PVM 4.12.24
			SUUNNITTELIJA/LA GEO	TYÖ NRO 21738
			PIIRUSTUS NRO 701	MUUTOS

Taratest

Work number 21738

Trial pit sampling report

Project information	**Client**	Granlund Oy			
	Project	URSA Hauki			
	Location	Ii, Herva			
	Author	Sitowise Oy	**Document Date**	18.11.2024	

Research point	**Point ID**	**TP1**					
	XY-coordinates	**N**	7265266	**E**	438806	**Coordinate system**	ETRS-TM35
	Ground surface Z	+79.78		**Leveling system**		N2000	

Field notes	**Author**	Otso Sattilainen				**Date**	20.11.2024
	Exavator equipment	25-t excavator					
	Machine contractor	Jussila Group Oy					
	Dimensions of the pit [m	**A**	7	**B**	5	**H**	5
	Water observations	Water started flowing into the pit from 40 cm depth					
	Bedrock observations	No bedrock reached					
	Pit filling method	The pit filled with soil excaveted from the pit					
	Soil layers	Depth (m)		Soil type estimation		Sample info, if taken	
		0-0,4		peat			
		0,4-0,6		gravel			
		0,6-5		sandy till		Proctor 10 l	
	Anything else						

Photograph

Taratest

Work number 21738

Trial pit sampling report

Project information	**Client**	Granlund Oy			
	Project	URSA Hauki			
	Location	Ii, Herva			
	Author	Sitowise Oy		**Document Date**	18.11.2024

Research point	**Point ID**	**TP2**					
	XY-coordinates	**N**	7263837	**E**	439505	**Coordinate system**	ETRS-TM35
	Ground surface Z	+84.33		**Leveling system**		N2000	

Field notes	**Author**	Otso Sattilainen				**Date**	20.11.2024
	Exavator equipment	25-t excavator					
	Machine contractor	Jussila					
	Dimensions of the pit [m	**A**	7	**B**	5	**H**	5
	Water observations	Dry					
	Bedrock observations	No bedrock reached					
	Pit filling method	The pit filled with soil excavated from the pit					
	Soil layers	Depth (m)	Soil type estimation	Sample info, if taken			
		0-5	sandy till	Proctor 10 l			
	Anything else						

Photograph

Taratest

Work number 21738

Trial pit sampling report

Project information	**Client**	Granlund Oy			
	Project	URSA Hauki			
	Location	Ii, Herva			
	Author	Sitowise Oy		**Document Date**	18.11.2024

Research point	**Point ID**	**TP3**					
	XY-coordinates	**N**	7264073	**E**	438873	**Coordinate system**	ETRS-TM35
	Ground surface Z	+80.35		**Leveling system**		N2000	

Field notes	**Author**	Otso Sattilainen				**Date**	19.11.2024
	Exavator equipment	25-t excavator					
	Machine contractor	Jussila Group Oy					
	Dimensions of the pit [m	**A**	7	**B**	5	**H**	5
	Water observations	Little bit moist from 3 m					
	Bedrock observations	No bedrock reached					
	Pit filling method	The pit filled with soil excaveted from the pit					
	Soil layers	Depth (m)	Soil type estimation	Sample info, if taken			
		0-5	sandy till	10 l Proctor			
	Anything else	Soil little bit more coarse in the top layer, still sand moraine					

Photograph

Taratest

Work number 21738

Trial pit sampling report

Project information	**Client**	Granlund Oy			
	Project	URSA Hauki			
	Location	Ii, Herva			
	Author	Sitowise Oy	**Document Date**	18.11.2024	

Research point	**Point ID**	**TP4**					
	XY-coordinates	**N**	7264704	**E**	438543	**Coordinate system**	ETRS-TM35
	Ground surface Z	+76.30		**Leveling system**		N2000	

Field notes	**Author**	Otso Sattilainen				**Date**	19.11.2024
	Exavator equipment	25-t excavator					
	Machine contractor	Jussila Group Oy					
	Dimensions of the pit [m	**A**	7	**B**	5	**H**	5
	Water observations	Groundwater from 1,5 m, surface waters earlier					
	Bedrock observations	No Bedrock reached					
	Pit filling method	The pit filled with soil excaveted from the pit					
	Soil layers	Depth (m)	Soil type estimation	Sample info, if taken			
		0-1,8	sandy till	Proctor 10 l			
		1,8-5	silty till	Proctor 10 l			
	Anything else						

Photographs

Taratest

Work number 21738

Trial pit sampling report

Project information	**Client**	Granlund Oy			
	Project	URSA Hauki			
	Location	Ii, Herva			
	Author	Sitowise Oy	**Document Date**	18.11.2024	

Research point	**Point ID**	**TP5**					
	XY-coordinates	**N**	7264675	**E**	438898	**Coordinate system**	ETRS-TM35
	Ground surface Z	+81.90		**Leveling system**		N2000	

Field notes	**Author**	Otso Sattilainen				**Date**	19.11.2024
	Exavator equipment	25-t excavator					
	Machine contractor	Jussila Group Oy					
	Dimensions of the pit [m	**A**	7	**B**	5	**H**	5
	Water observations	Dry					
	Bedrock observations	No bedrock reached					
	Pit filling method	The pit filled with soil excaveted from the pit					
	Soil layers	Depth (m)	Soil type estimation	Sample info, if taken			
		0-0,5	sand	Proctor 10 l			
		0,5-5	sandy till	Proctor 10 l			
	Anything else	Big rocks in the sand and sand moraine					

Photograph

Taratest

Work number 21738

Trial pit sampling report

Project information	**Client**	Granlund Oy			
	Project	URSA Hauki			
	Location	Ii, Herva			
	Author	Sitowise Oy		**Document Date**	18.11.2024

Research point	**Point ID**	**TP6**					
	XY-coordinates	**N**	7264384	**E**	439487	**Coordinate system**	ETRS-TM35
	Ground surface Z	+84.52		**Leveling system**		N2000	

Field notes	**Author**	Otso Sattilainen				**Date**	20.11.2024
	Exavator equipment	25-t excavator					
	Machine contractor	Jussila Group Oy					
	Dimensions of the pit [m	**A**	7	**B**	5	**H**	5
	Water observations	Dry					
	Bedrock observations	No bedrock reached					
	Pit filling method	The pit filled with soil excaveted from the pit					
	Soil layers	Depth (m)	Soil type estimation	Sample info, if taken			
		0-5	sandy till	Proctor 10 l			
	Anything else						

Photograph

Taratest

Work number 21738

Trial pit sampling report

Project information	**Client**	Granlund Oy			
	Project	URSA Hauki			
	Location	Ii, Herva			
	Author	Sitowise Oy	**Document Date**	18.11.2024	

Research point	**Point ID**	**TP7**					
	XY-coordinates	**N**	7263401	**E**	438610	**Coordinate system**	ETRS-TM35
	Ground surface Z	+81.06		**Leveling system**		N2000	

Field notes	**Author**	Otso Sattilainen				**Date**	21.11.2024
	Exavator equipment	25-t excavator					
	Machine contractor	Jussila Group Oy					
	Dimensions of the pit [m	**A**	7	**B**	5	**H**	5
	Water observations	Water started flowing into the pit from the surface level					
	Bedrock observations	No bedrock reached					
	Pit filling method	The pit filled with soil excaveted from the pit					
	Soil layers	Depth (m)		Soil type estimation		Sample info, if taken	
		0-0,4		peat			
		0,4-5		silty till		Proctor 10 l	
	Anything else						

Photograph

Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H02**				Coordinates	N	7263109.942		
Installation date	28.3.2025					E	438325.201		
Installer	JK					Z ground level	+80,18		
Drill rig	GM200					Reference system for coordinates and	TM35 N2000		
Pipe material	PEH				Pipe Z levels	Z Pipe top level	+81,33		
Diameter (inside/outside mm)	51/63						Depth (m)	Z level	
Filter	yes					Pipe base level	13,00	+68,33	
Top structure	x	cover		bare		well		Filter top level	12	+69,33	
Lock		yes	x	no				Filter base level	13	+68,33	

SOIL TYPE DATA

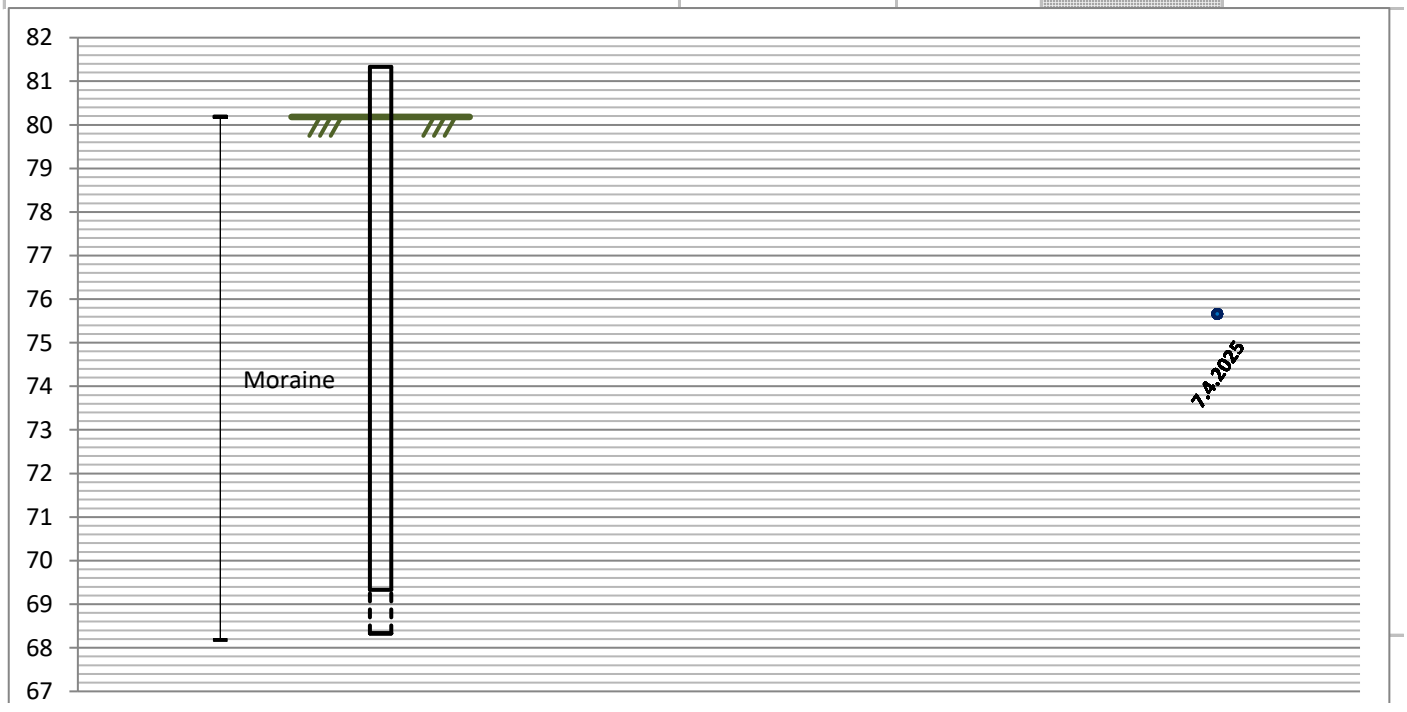
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+80,18	12	+68,18	Moraine
12	+68,18			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
7.4.2025	5,68	+75,65	Kalle Sihvo

ADDITIONAL INFORMATION

Installed vandalism pipe.



Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H06**				Coordinates	N	7263155.488		
Installation date	29.3.2025					E	439219.522		
Installer	JK					Z ground level	+85,19		
Drill rig	GM200					Reference system for coordinates and	TM35 N2000		
Pipe material	PEH				Pipe Z levels	Z Pipe top level	+86,22		
Diameter (inside/outside mm)	51/63						Depth (m)	Z level	
Filter	yes					Pipe base level	4,00	+82,22	
Top structure	x	cover		bare		well		Filter top level	3	+83,22	
Lock		yes	x	no				Filter base level	4	+82,22	

SOIL TYPE DATA

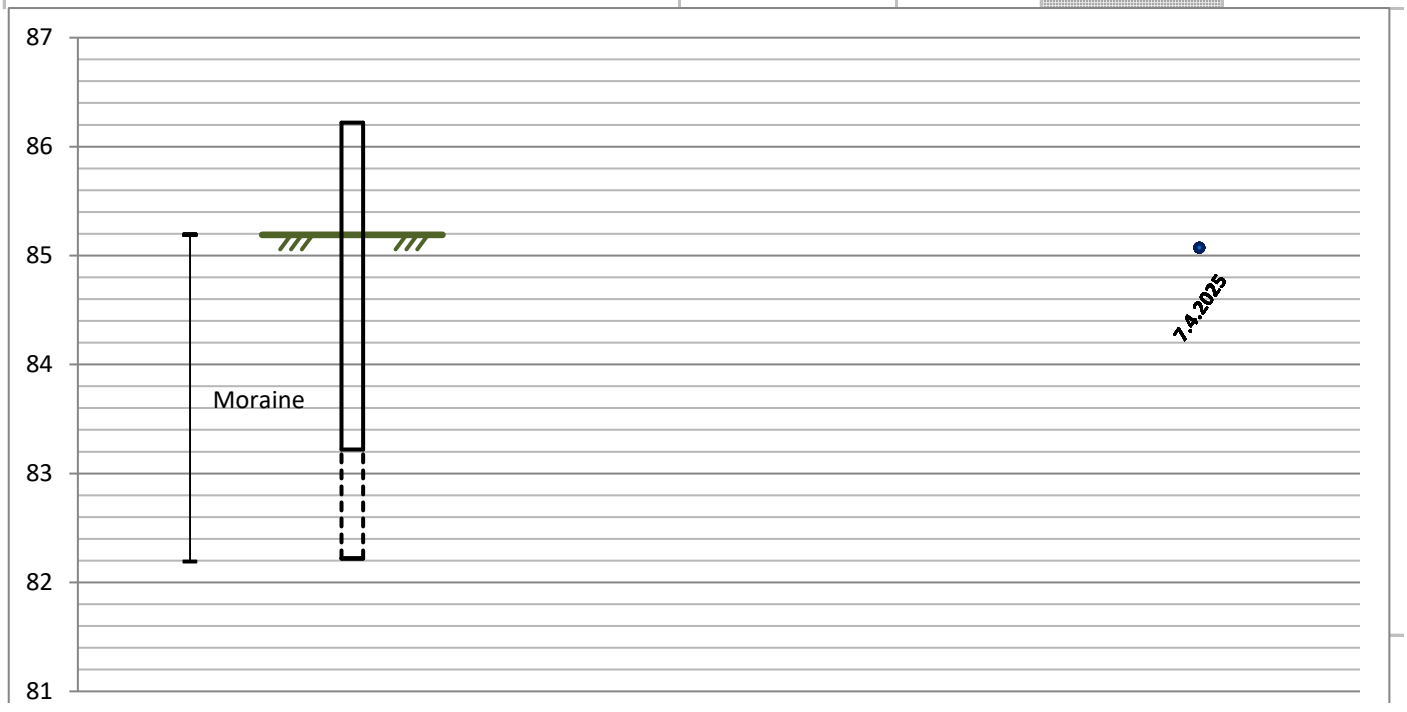
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+85,19	3	+82,19	Moraine
3	+82,19			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
7.4.2025	1,15	+85,07	Kalle Sihvo

ADDITIONAL INFORMATION

Installed vandalism pipe.



Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H11**				Coordinates	N	7264193.986		
Installation date	2.2.2025					E	439023.715		
Installer	NP					Z ground level	+82,11		
Drill rig	GM100					Reference system for coordinates and	TM35 N2000		
Pipe material	PEH				Pipe Z levels	Z Pipe top level	+83,06		
Diameter (inside/outside mm)	51/63						Depth (m)	Z level	
Filter	yes					Pipe base level	7,20	+75,86	
Top structure	x	cover		bare	well	Filter top level	5,2	+77,86	
Lock		yes	x	no		Filter base level	7,2	+75,86	

SOIL TYPE DATA

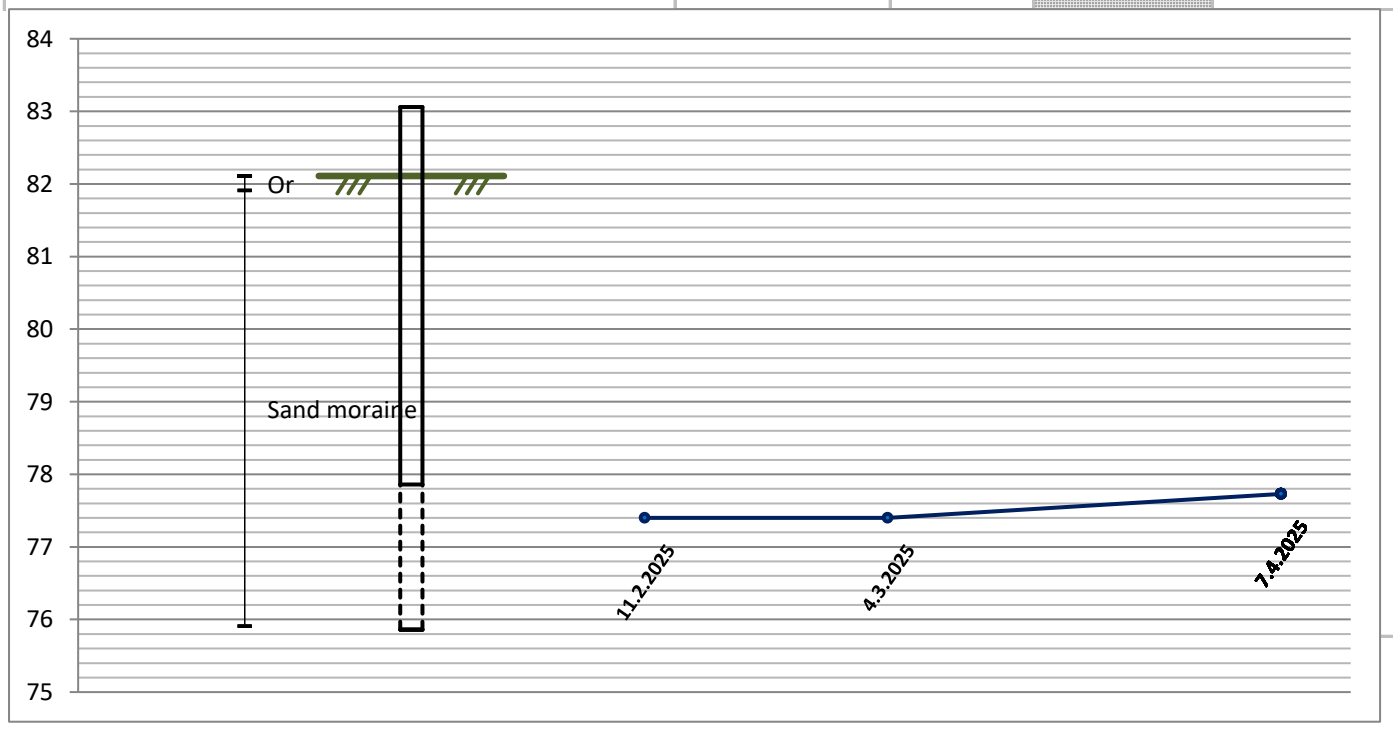
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+82,11	0,2	+81,91	Or
0,2	+81,91	6,2	+75,91	Sand moraine
6,2	+75,91			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
11.2.2025	5,66	+77,40	KS
4.3.2025	5,66	+77,40	KS
7.4.2025	5,33	+77,73	KS

ADDITIONAL INFORMATION

Installed vandalism pipe.



Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H24**				Coordinates	N	7263765.020		
Installation date	26.3.2025					E	439499.200		
Installer	JK					Z ground level	+85,02		
Drill rig	GM200					Reference system for coordinates and	TM35 N2000		
Pipe material	PEH				Pipe Z levels	Z Pipe top level	+85,96		
Diameter (inside/outside mm)	51/63						Depth (m)	Z level	
Filter	yes					Pipe base level	24,40	+61,56	
Top structure	x	cover		bare		well		Filter top level	21,4	+64,56	
Lock		yes	x	no				Filter base level	24,4	+61,56	

SOIL TYPE DATA

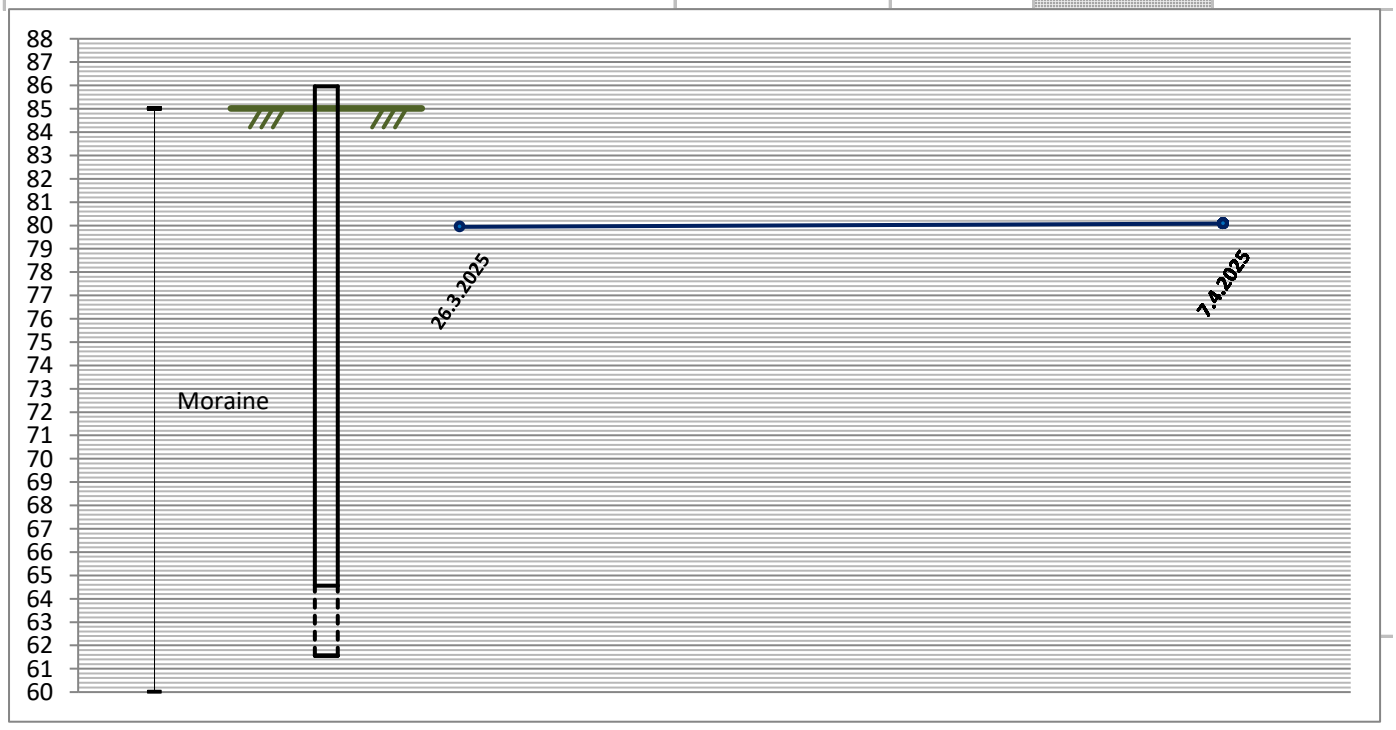
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+85,02	25	+60,02	Moraine
25	+60,02			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
26.3.2025	6,02	+79,94	KS
7.4.2025	5,88	+80,08	KS

ADDITIONAL INFORMATION

Installed vandalism pipe.



Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H26**					Coordinates	N	7264165.275			
Installation date	2.4.2025						E	438428.169			
Installer	JK						Z ground level	+74,45			
Drill rig	GM200						Reference system for coordinates and	TM35 N2000			
Pipe material	PEH					Pipe Z levels	Z Pipe top level	+75,52			
Diameter (inside/outside mm)	51/63							Depth (m)	Z level		
Filter	yes						Pipe base level	22,50	+53,02		
Top structure	x	cover		bare		well	Filter top level	20,5	+55,02		
Lock		yes	x	no			Filter base level	22,5	+53,02		

SOIL TYPE DATA

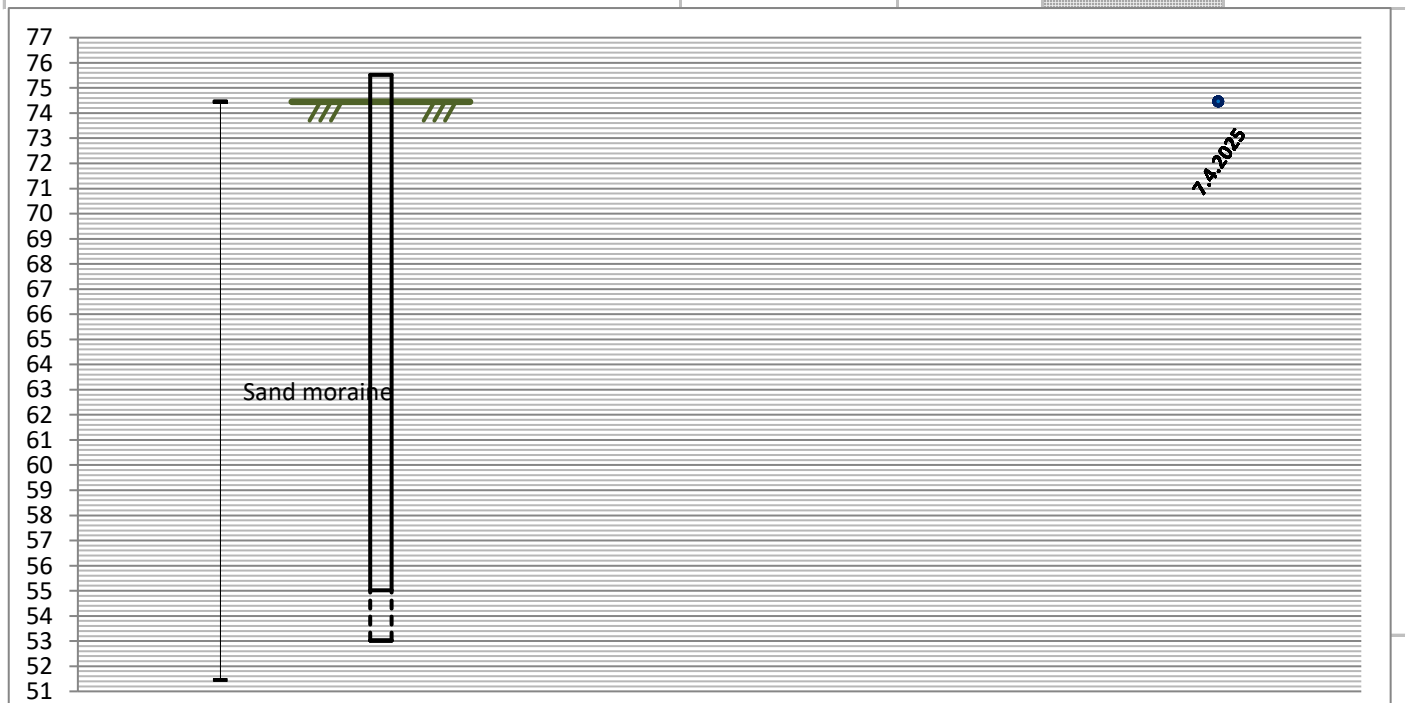
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+74,45	23	+51,45	Sand moraine
23	+51,45			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
7.4.2025	0,00		KS

ADDITIONAL INFORMATION

Installed vandalism pipe. Overflowing.



Perched water standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H26**				Coordinates	N	7264165.604		
Installation date	1.4.2025					E	438429.292		
Installer	JK					Z ground level	+74,49		
Drill rig	GM200					Reference system for coordinates and	TM35 N2000		
Pipe material	PEH				Pipe Z levels	Z Pipe top level	+75,48		
Diameter (inside/outside mm)	51/63						Depth (m)	Z level	
Filter	yes					Pipe base level	3,90	+71,58	
Top structure	x	cover		bare		well	Filter top level	2,9	+72,58
Lock		yes	x	no			Filter base level	3,9	+71,58

SOIL TYPE DATA

Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+74,49	3	+71,49	Moraine
3	+71,49			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
7.4.2025	0,78	+74,70	KS

ADDITIONAL INFORMATION

Installed vandalism pipe.

Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H33**				Coordinates	N	7264399.055		
Installation date	12.12.2024					E	438201.538		
Installer	NP					Z ground level	+71,28		
Drill rig	GM100					Reference system for coordinates and	TM35 N2000		
Pipe material	PEH				Pipe Z levels	Z Pipe top level	+72,86		
Diameter (inside/outside mm)	51/63						Depth (m)	Z level	
Filter	yes					Pipe base level	20,00	+52,86	
Top structure	x	cover		bare	well	Filter top level	18	+54,86	
Lock		yes	x	no		Filter base level	20	+52,86	

SOIL TYPE DATA

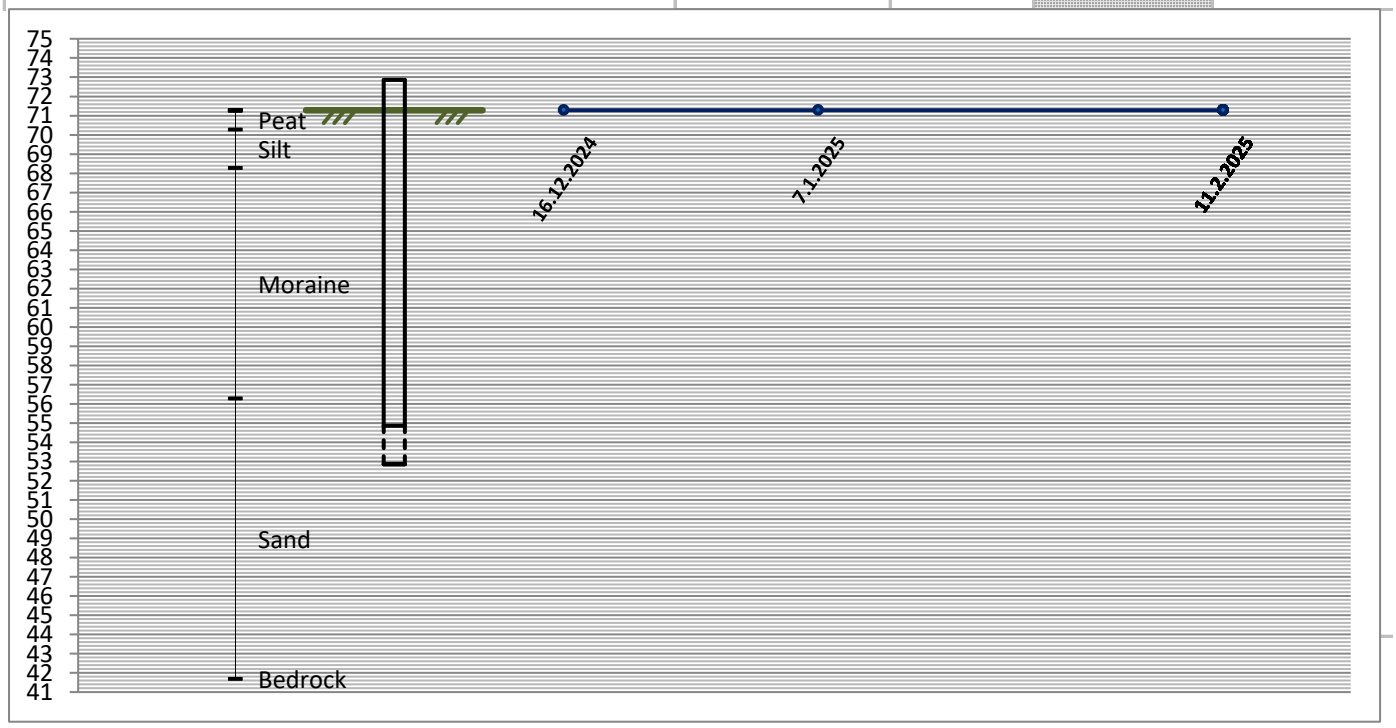
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+71,28	1	+70,28	Peat
1	+70,28	3	+68,28	Silt
3	+68,28	15	+56,28	Moraine
15	+56,28	29,6	+41,68	Sand
29,6	+41,68			Bedrock

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
16.12.2024	0,00		MM
7.1.2025	0,00		MM
11.2.2025	0,00		KS

ADDITIONAL INFORMATION

*Installed vandalism pipe. Overflowing.
**In January 2025 the pipe top level was increased 0,9 meters
***11th of February 2025 the pipe is still overflowing



Perched water standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H33**					Coordinates	N	7264389.384	
Installation date	6.3.2025						E	438199.315	
Installer	JK						Z ground level	+71,49	
Drill rig	GM200						Reference system for coordinates and	TM35 N2000	
Pipe material	PEH					Pipe Z levels	Z Pipe top level	+72,49	
Diameter (inside/outside mm)	51/63							Depth (m)	Z level
Filter	yes						Pipe base level	3,60	+68,89
Top structure	x	cover		bare	well		Filter top level	2,6	+69,89
Lock		yes	x	no			Filter base level	3,6	+68,89

SOIL TYPE DATA

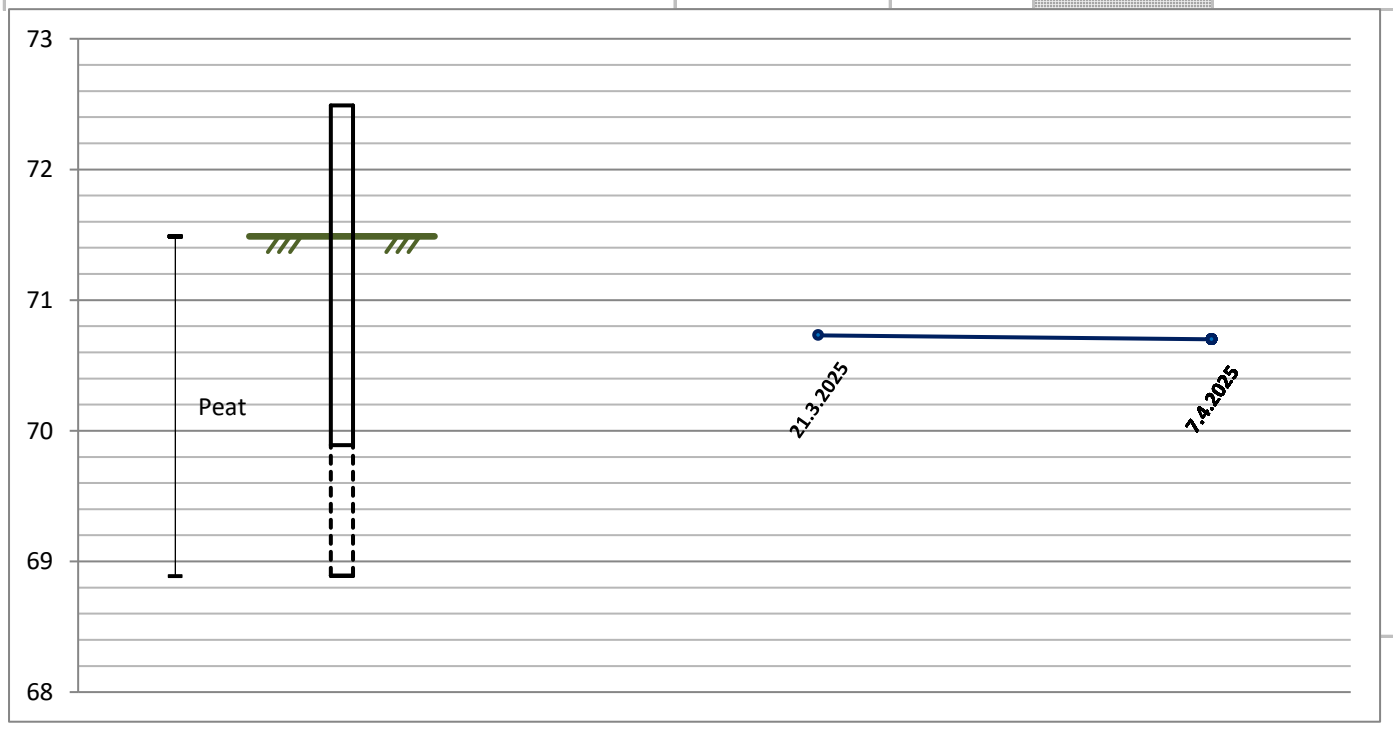
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+71,49	2,6	+68,89	Peat
2,6	+68,89			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
21.3.2025	1,76	+70,73	KS
7.4.2025	1,79	+70,70	KS

ADDITIONAL INFORMATION

Installed vandalism pipe.



Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H40**				Coordinates	N	7264636.952		
Installation date	19.3.2025					E	438855.995		
Installer	JK					Z ground level	+81,31		
Drill rig	GM200					Reference system for coordinates and	TM35 N2000		
Pipe material	PEH				Pipe Z levels	Z Pipe top level	+82,31		
Diameter (inside/outside mm)	51/63						Depth (m)	Z level	
Filter	yes					Pipe base level	4,00	+78,31	
Top structure	x	cover		bare		well		Filter top level	3	+79,31	
Lock		yes	x	no				Filter base level	4	+78,31	

SOIL TYPE DATA

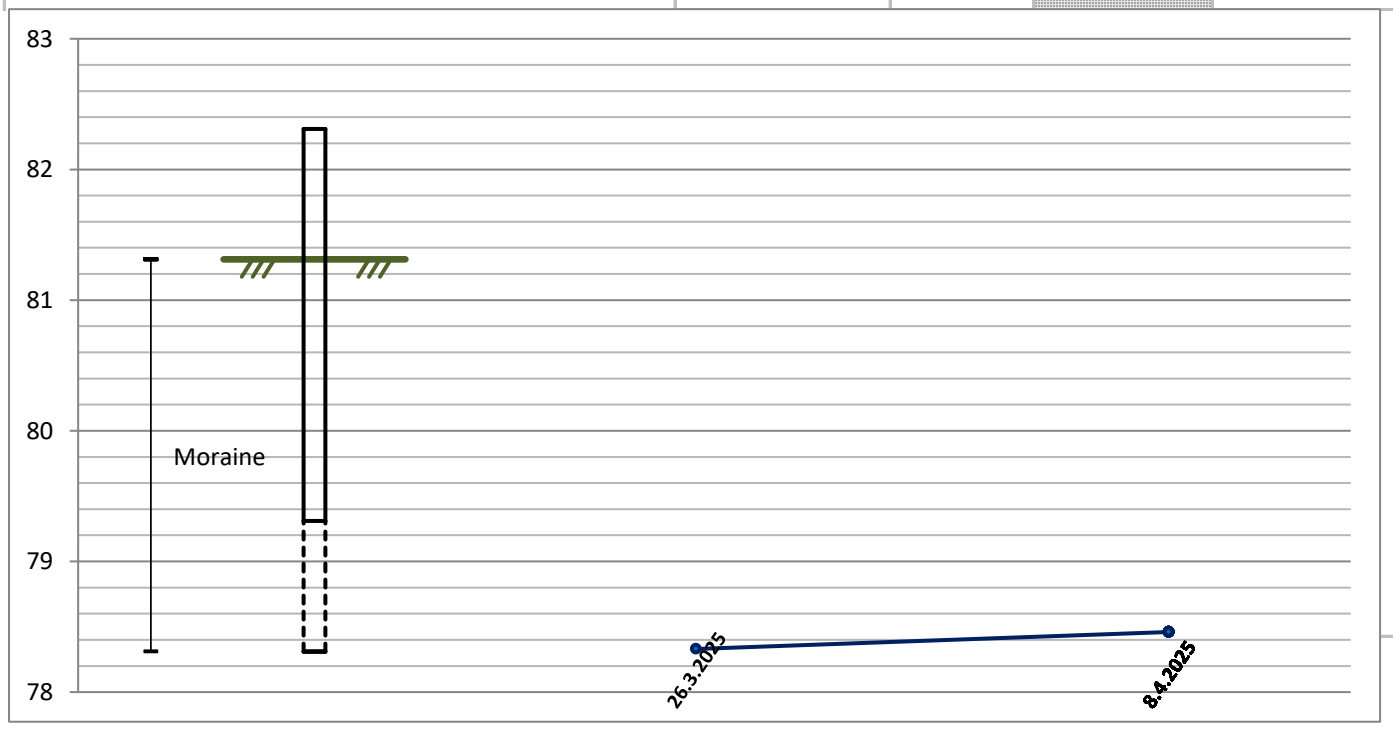
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+81,31	3	+78,31	Moraine
3	+78,31			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
26.3.2025	3,98	+78,33	KS
8.4.2025	3,85	+78,46	KS

ADDITIONAL INFORMATION

Installed vandalism pipe. Dry pipe.



Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H44**								
Installation date	20.12.2024								
Installer	NP								
Drill rig	GM100								
Pipe material	PEH								
Diameter (inside/outside mm)	51/63								
Filter	yes								
Top structure	x	cover		bare		well			
Lock		yes	x	no					

Coordinates		
	N	7264949.343
	E	439140.753
	Z ground level	+81,91
	Reference system for coordinates and	TM35 N2000

Pipe Z levels		
	Z Pipe top level	+82,76
	Depth (m)	Z level
	Pipe base level	5,50	+77,26
	Filter top level	4,5	+78,26
	Filter base level	5,5	+77,26

SOIL TYPE DATA

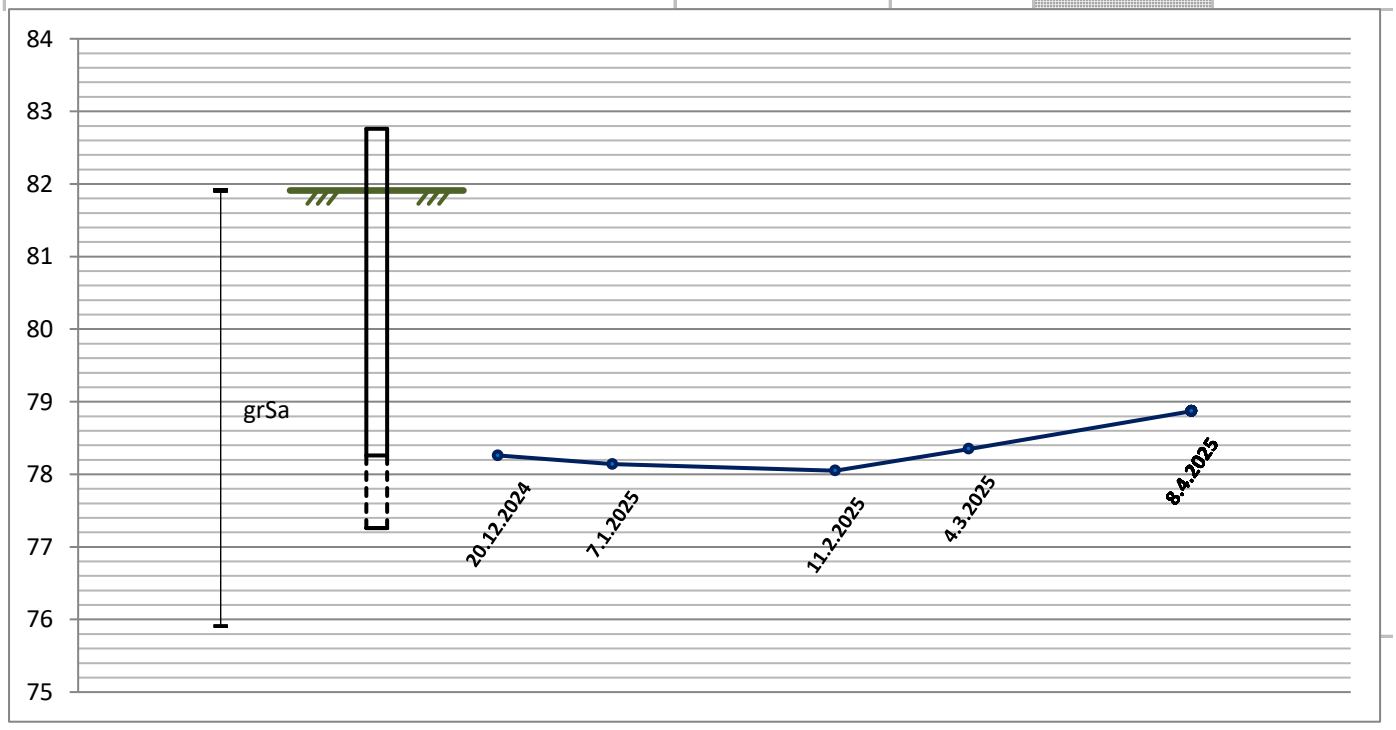
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+81,91	6	+75,91	grSa
6	+75,91			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
20.12.2024	4,50	+78,26	NP
7.1.2025	4,62	+78,14	MM
11.2.2025	4,71	+78,05	KS
4.3.2025	4,41	+78,35	KS
8.4.2025	3,89	+78,87	KS

ADDITIONAL INFORMATION

Installed vandalism pipe.



Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H47**				Coordinates	N	7265237.314		
Installation date	11.3.2025					E	438829.247		
Installer	JK					Z ground level	+80,32		
Drill rig	GM200					Reference system for coordinates and	TM35 N2000		
Pipe material	PEH				Pipe Z levels	Z Pipe top level	+81,32		
Diameter (inside/outside mm)	51/63						Depth (m)	Z level	
Filter	yes					Pipe base level	18,00	+63,32	
Top structure	x	cover		bare	well	Filter top level	17	+64,32	
Lock		yes	x	no		Filter base level	18	+63,32	

SOIL TYPE DATA

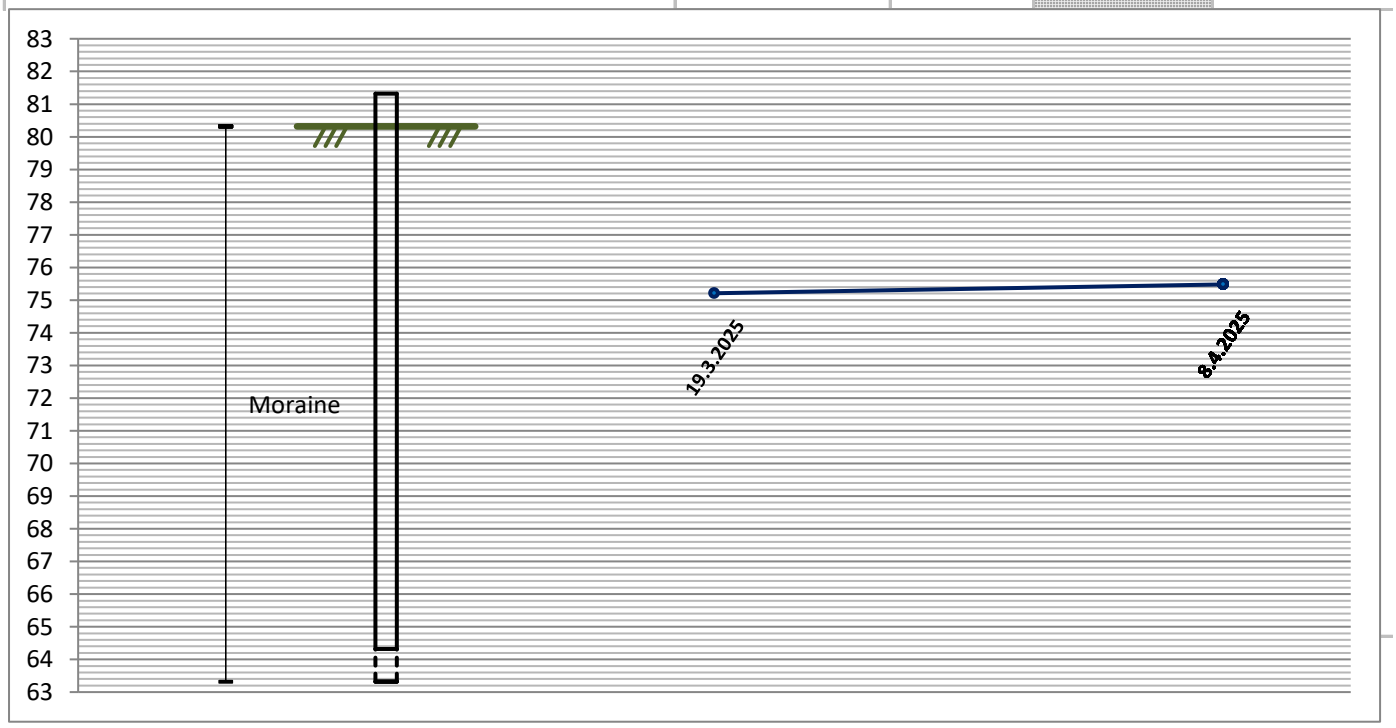
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+80,32	17	+63,32	Moraine
17	+63,32			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
19.3.2025	6,11	+75,21	KS
8.4.2025	5,84	+75,48	KS

ADDITIONAL INFORMATION

Installed vandalism pipe.



Perched water standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H47**					Coordinates	N	7265237.314	
Installation date	12.3.2025						E	438829.247	
Installer	JK						Z ground level	+80,48	
Drill rig	GM200						Reference system for coordinates and	TM35 N2000	
Pipe material	PEH						Z Pipe top level	+81,28	
Diameter (inside/outside mm)	51/63							Depth (m)	Z level
Filter	yes					Pipe Z levels	Pipe base level	3,95	+77,33
Top structure	x	cover		bare			Filter top level	2,95	+78,33
		well					Filter base level	3,95	+77,33
Lock		yes	x	no					

SOIL TYPE DATA

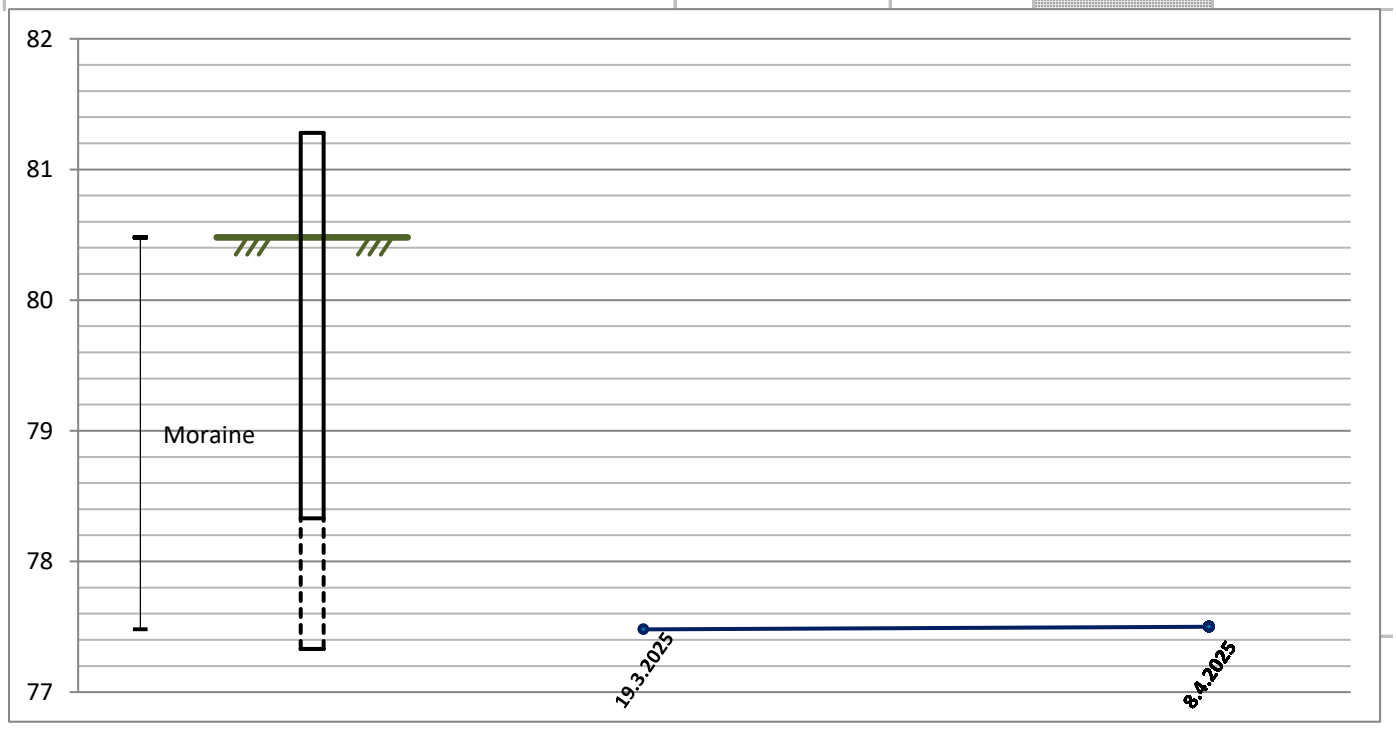
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+80,48	3	+77,48	Moraine
3	+77,48			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
19.3.2025	3,80	+77,48	KS
8.4.2025	3,78	+77,50	KS

ADDITIONAL INFORMATION

Installed vandalism pipe.
** 19.3. and 8.4.2025 Dry



Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H50**				Coordinates	N	7265936.957		
Installation date	18.3.2025					E	438480.695		
Installer	JK					Z ground level	+80,06		
Drill rig	GM200					Reference system for coordinates and	TM35 N2000		
Pipe material	PEH				Pipe Z levels	Z Pipe top level	+80,98		
Diameter (inside/outside mm)	51/63						Depth (m)	Z level	
Filter	yes					Pipe base level	14,00	+66,98	
Top structure	x	cover		bare		well	Filter top level	13	+67,98
Lock		yes	x	no			Filter base level	14	+66,98

SOIL TYPE DATA

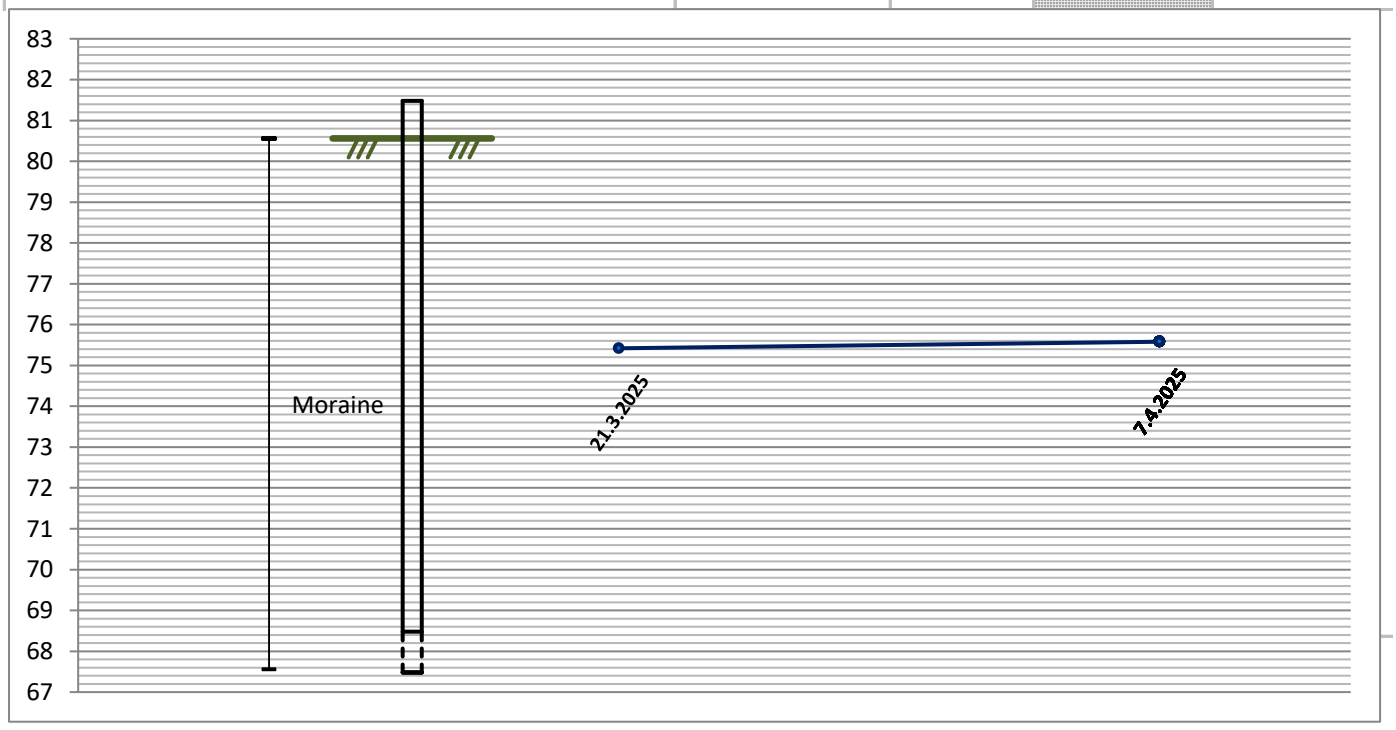
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+80,06	13	+67,06	Moraine
13	+67,06			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
21.3.2025	6,06	+74,92	KS
7.4.2025	5,90	+75,08	KS

ADDITIONAL INFORMATION

Installed vandalism pipe.



Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H51**					Coordinates	N	7263547.035	
Installation date	28.1.2025						E	439845.708	
Installer	NP						Z ground level	+89,53	
Drill rig	GM100						Reference system for coordinates and	TM35 N2000	
Pipe material	PEH					Pipe Z levels	Z Pipe top level	+90,53	
Diameter (inside/outside mm)	51/63							Depth (m)	Z level
Filter	yes						Pipe base level	7,20	+83,33
Top structure	x	cover		bare		well	Filter top level	5,2	+85,33
Lock		yes	x	no			Filter base level	7,2	+83,33

SOIL TYPE DATA

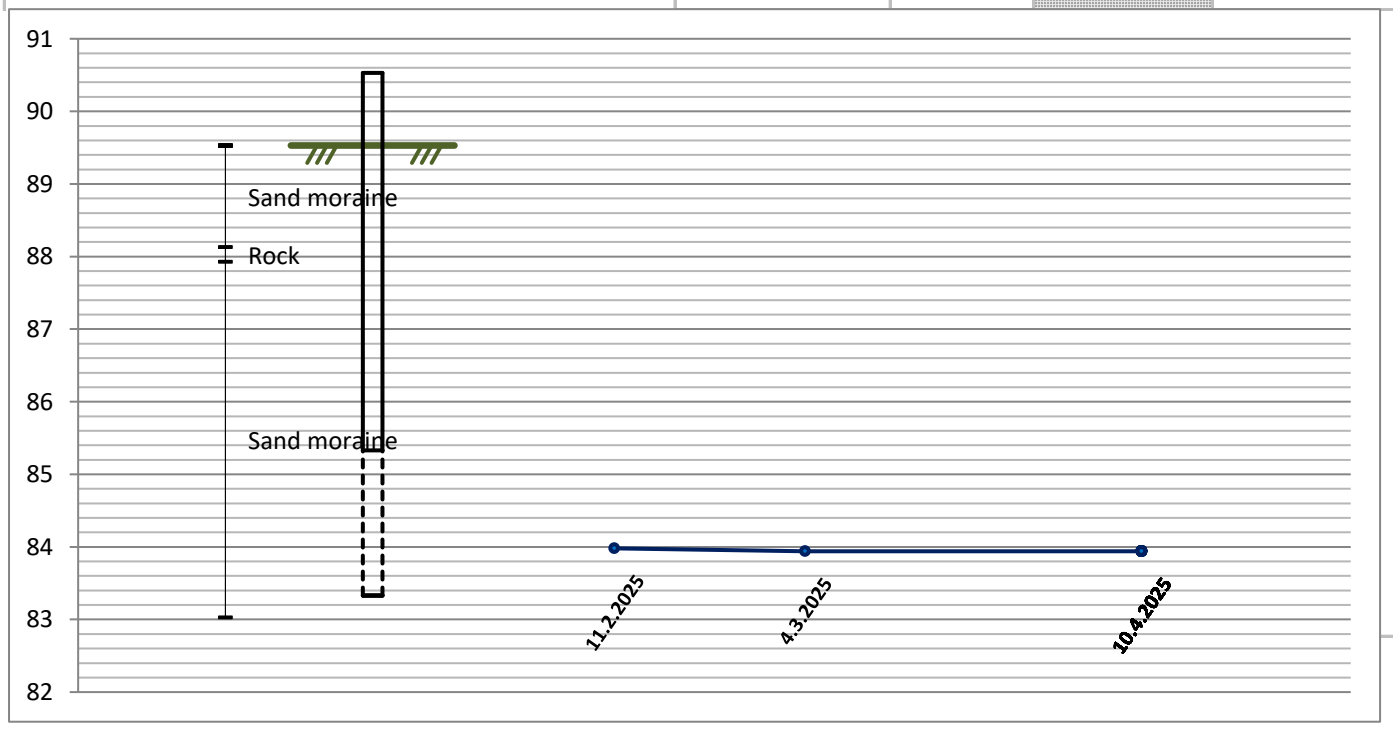
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+89,53	1,4	+88,13	Sand moraine
1,4	+88,13	1,6	+87,93	Rock
1,6	+87,93	6,5	+83,03	Sand moraine
6,5	+83,03			

GROUNDWATER LEVEL MEASUREMENTS

Date	Depth (m)	Z level	Measurer
11.2.2025	6,55	+83,98	KS
4.3.2025	6,59	+83,94	KS
10.4.2025	6,59	+83,94	KS

ADDITIONAL INFORMATION

*Installed vandalism pipe.
11.02.2025 and 4.3.2025 **Wet mud or silt at the level where depth indicator beeped and the indicator did not sink any deeper from that level.



Groundwater standpipe card

ORDER INFORMATION		
	Project number	21738
	Client	Granlund Oy
	Location	URSA, Hauki Herva

PIPE DATA

Pipe number	**H51B**								
Installation date	9.4.2025								
Installer	SV								
Drill rig	GM100								
Pipe material	PEH								
Diameter (inside/outside mm)	51/63								
Filter	yes								
Top structure	x	cover		bare		well			
Lock		yes	x	no					

Coordinates		
	N	7263540.458
	E	439833.994
	Z ground level	+89,66
	Reference system for coordinates and	TM35 N2000

Pipe Z levels		
	Z Pipe top level	+90,53
	Depth (m)	Z level
	Pipe base level	7,30	+83,23
	Filter top level	5,3	+85,23
	Filter base level	7,3	+83,23

SOIL TYPE DATA

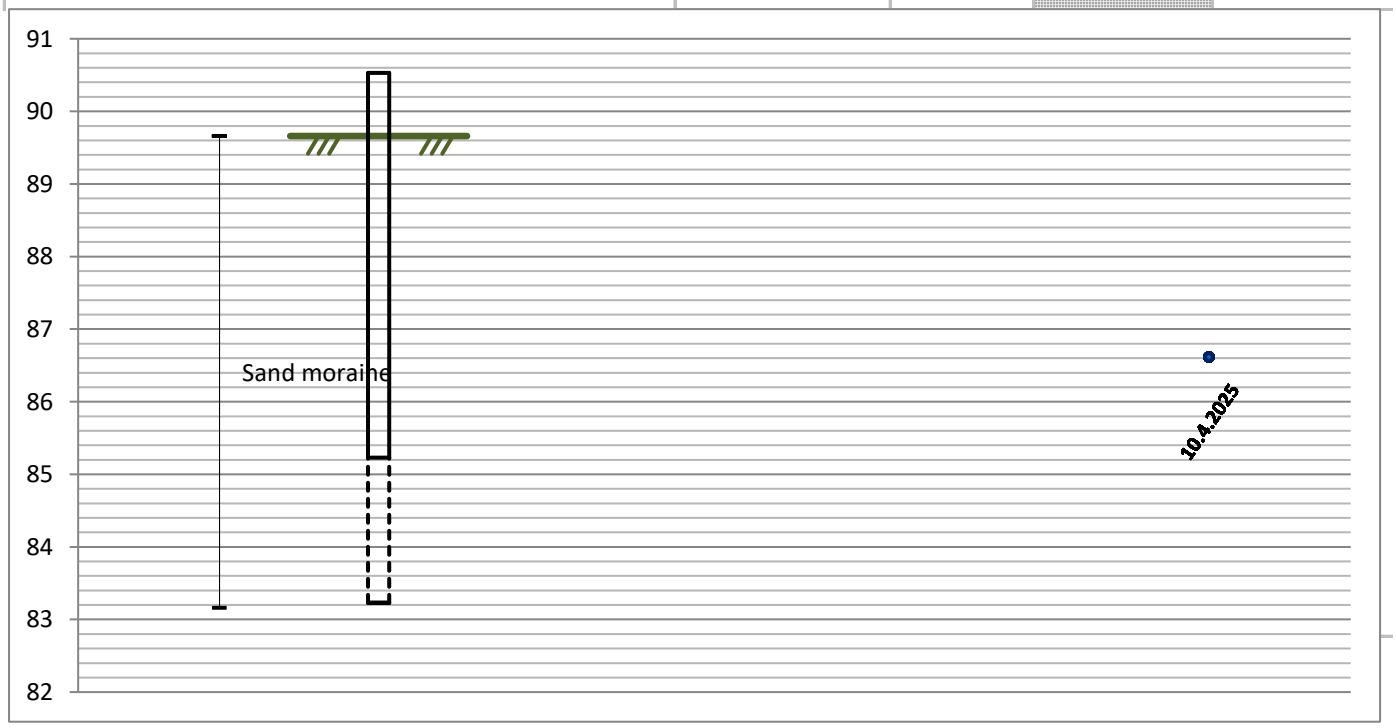
Layer (top)		Layer (base)		Soil type
Depth	Level	Depth	Level	
0	+89,66	6,5	+83,16	Sand moraine
6,5	+83,16			

GROUNDWATER LEVEL MEASUREMENTS

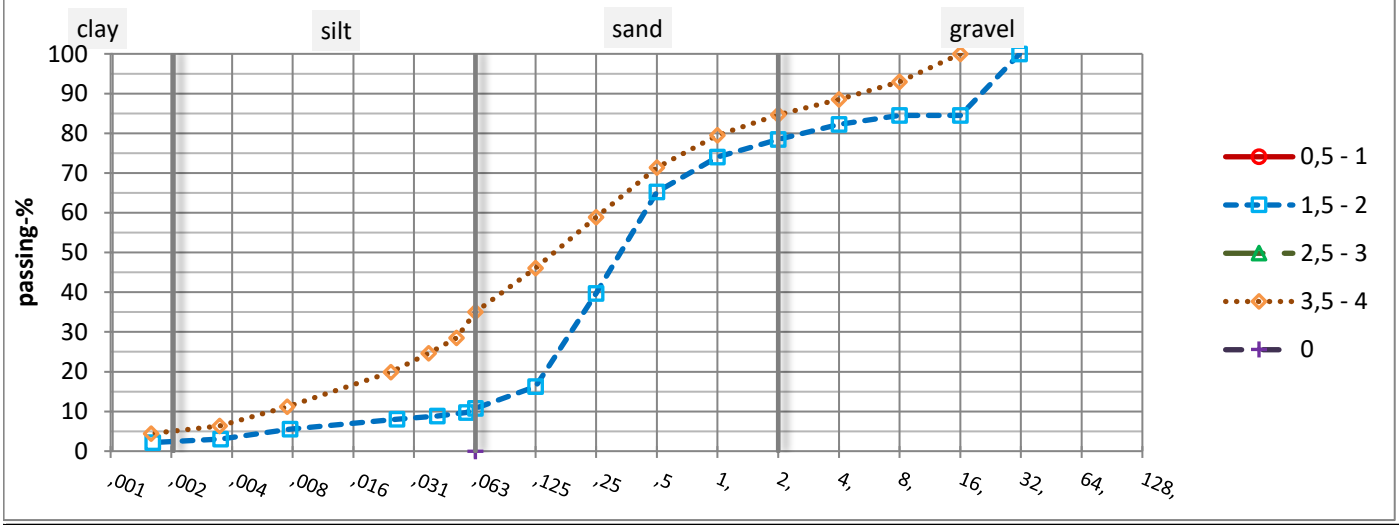
Date	Depth (m)	Z level	Measurer
10.4.2025	3,92	+86,61	KS

ADDITIONAL INFORMATION

*Installed vandalism pipe.



Project	21 738	Point number	H01	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H01	H01	H01	H01	
	depth [m]	0,5 - 1	1,5 - 2	2,5 - 3	3,5 - 4	
	Sampler/ quality class*					
	date	19.11.2024	19.11.2024	19.11.2024	19.11.2024	
	researcher	MK	MK	MK	MK	
*Laboratory determined						
soil type	visual assesment	SrMr		SiMr		
	CEN-ISO		grSa		siSa	
	Geotechnical		HkMr		HkMr	
	sulfide soil					
	notes					
particle size determination			hydrometer & wet sieving		hydrometer & wet sieving	
clay content [%]			2,4		5,1	
w [%] | w_F [%]**			20,9		13,6	
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	RÄ	RÄ	RÄ	RÄ	
	start date	12.12.2024	12.12.2024	12.12.2024	12.12.2024	
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

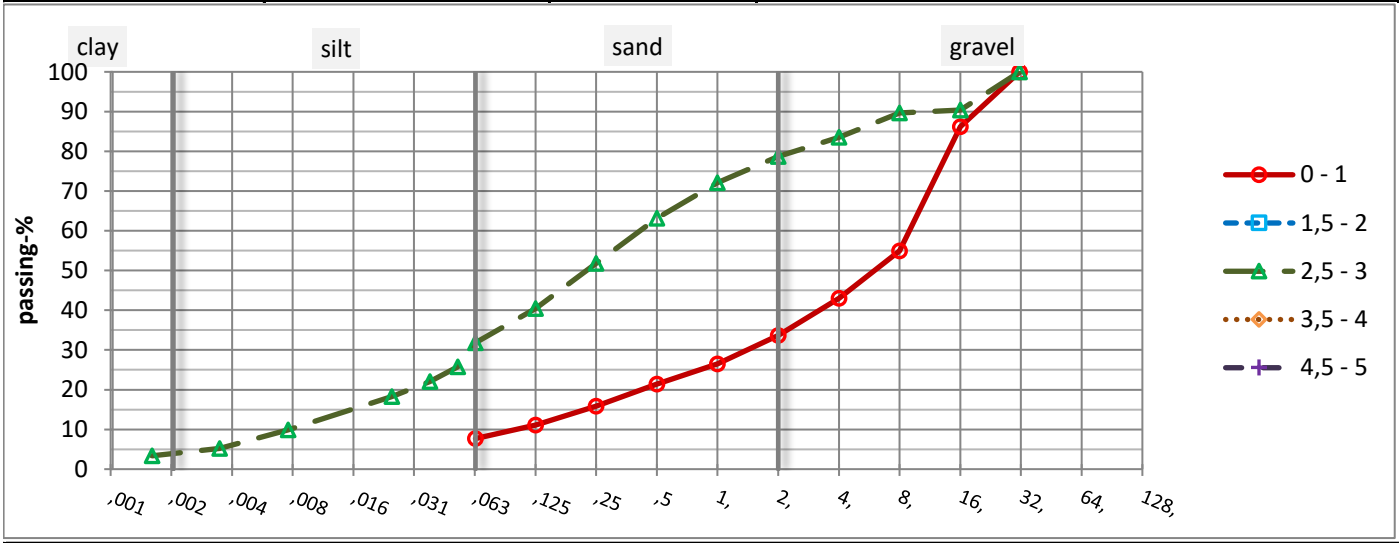
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H03	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H03	H03	H03	H03	H03
	depth [m]	0 - 1	1,5 - 2	2,5 - 3	3,5 - 4	4,5 - 5
	Sampler/ quality class*					
	date	20.11.2024	20.11.2024	20.11.2024	20.11.2024	20.11.2024
	researcher	MK	MK	MK	MK	MK
*Laboratory determined						
soil type	visual assesment		HkMr		HkMr	HkMr
	CEN-ISO	saGr		grsiSa		
	Geotechnical	SrMr		HkMr		
	sulfide soil					
	notes					
particle size determination		wet sieving		hydrometer & wet sieving		
clay content [%]				3,9		
w [%] | w_F [%]**		9,6		7,4		9,1
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	RÄ	RÄ	RÄ	RÄ	RÄ
	start date	12.12.2024	12.12.2024	12.12.2024	12.12.2024	12.12.2024
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

Sample observations and anomalies:	
Point H03, depth 0-1m	/Heavy organic content of test sample, increases uncertainty of areometer test

Optional images from samples:

1.

2.

3.

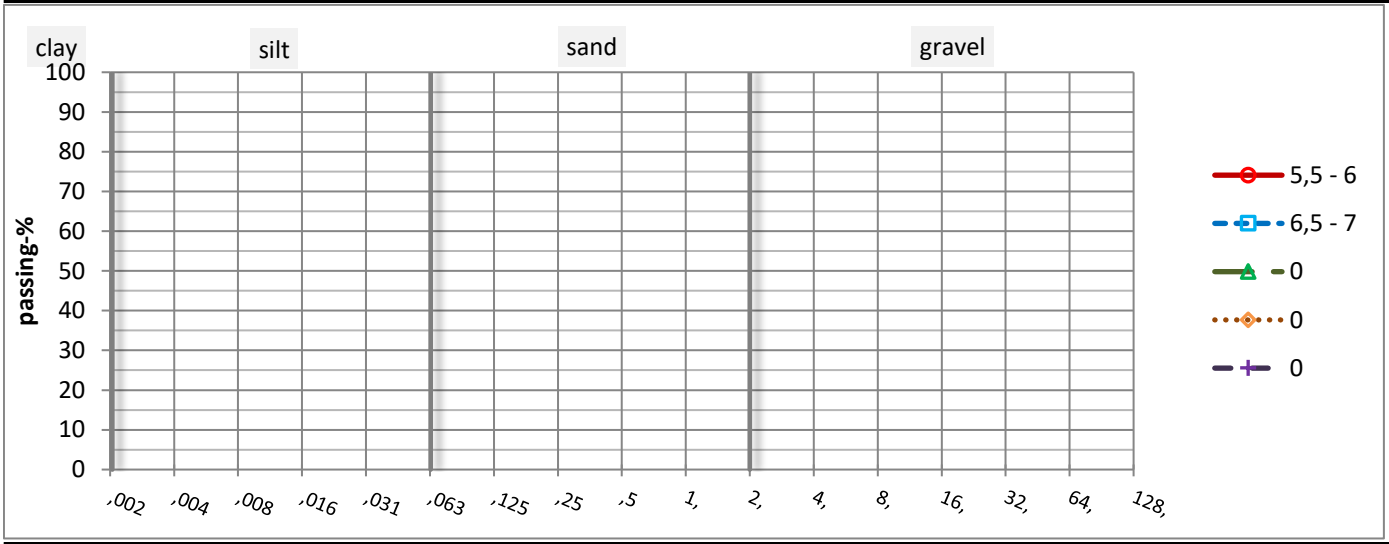
4.

5.

1	
2	
3	
4	
5	

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H03	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H03	H03			
	depth [m]	5,5 - 6	6,5 - 7			
	Sampler/ quality class*					
	date	20.11.2024	20.11.2024			
	researcher	MK	MK			
*Laboratory determined						
soil type	visual assesment	HkMr	siHk			
	CEN-ISO					
	Geotechnical					
	sulfide soil					
	notes					
particle size determination						
clay content [%]						
w [%] | w_F [%]**		23,2	9,8			
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	RÄ	RÄ			
	start date	12.12.2024	12.12.2024			
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x client	x project folder		also:	
research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of laboratory testing:			Tomi Sahlman		

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

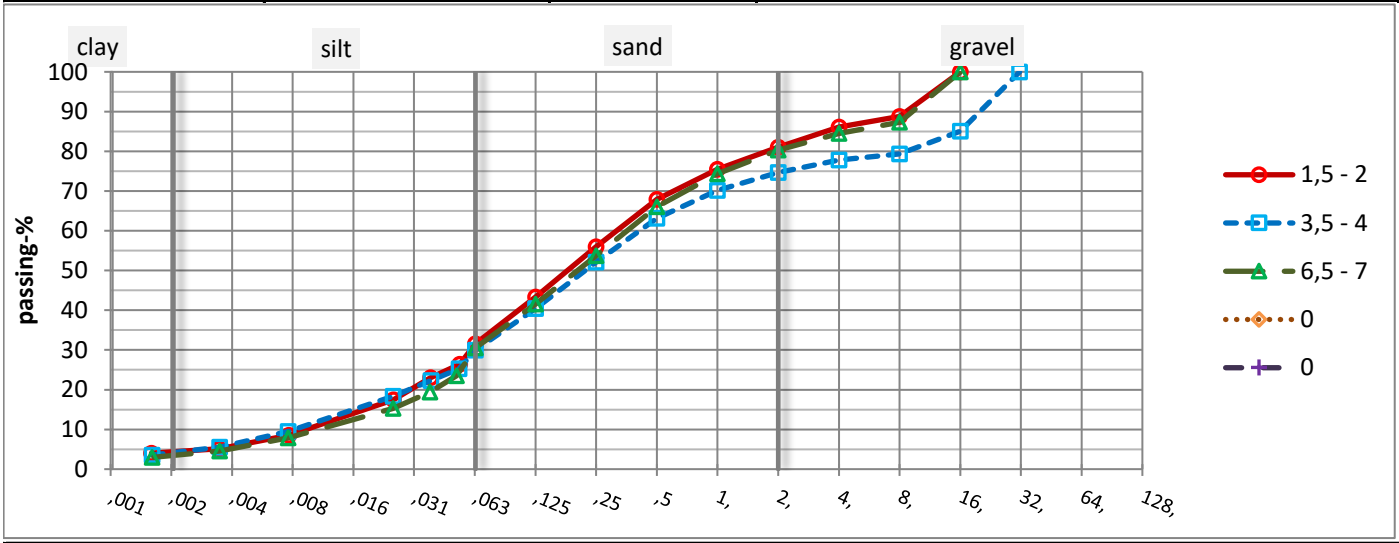
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H06	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H06	H06	H06		
	depth [m]	1,5 - 2	3,5 - 4	6,5 - 7		
	Sampler/ quality class*					
	date	28.11.2024	28.11.2024	28.11.2024		
	researcher	IS	IS	IS		
*Laboratory determined						
soil type	visual assesment					
	CEN-ISO	siSa	grsiSa	siSa		
	Geotechnical	HkMr	HkMr	HkMr		
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving	hydrometer & wet sieving		
clay content [%]		4,4	4,2	3,5		
w [%] | w_F [%]**		12,9	12,3	12,3		
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	RÄ	RÄ	RÄ		
	start date	11.12.2024	11.12.2024	11.12.2024		
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

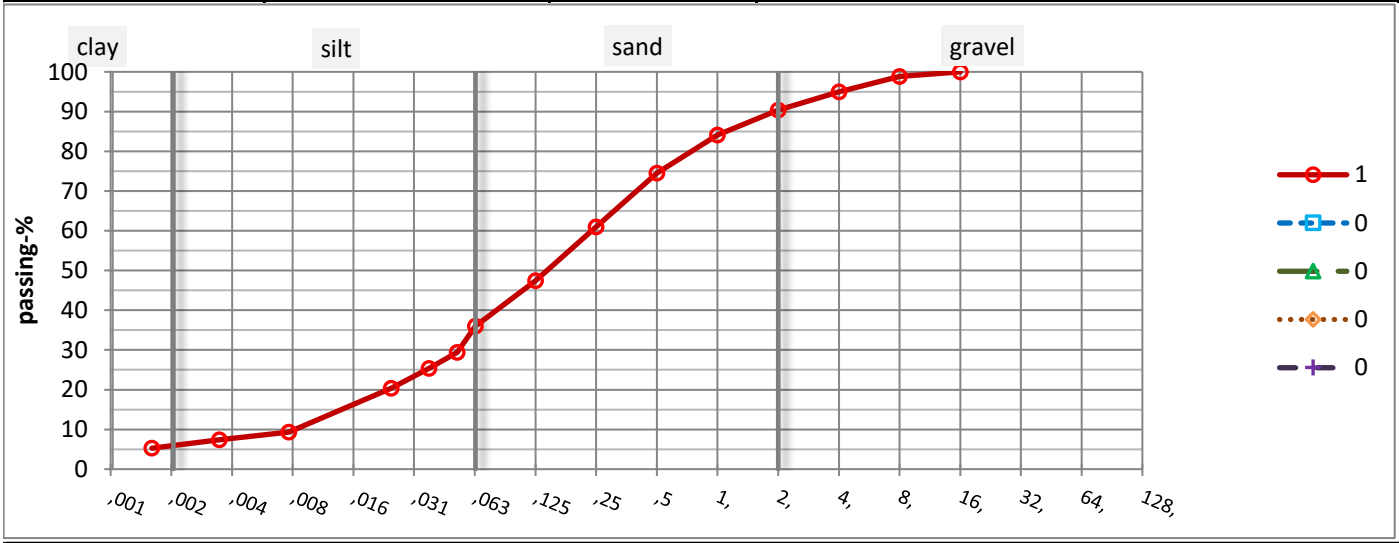
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H07	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H07					
	depth [m]	1					
	Sampler/ quality class*						
	date	30.1.2025					
	researcher	EV					
*Laboratory determined							
soil type	visual assesment						
	CEN-ISO	siSa					
	Geotechnical	siHkMr					
	sulfide soil						
	notes						
particle size determination		hydrometer & wet sieving					
clay content [%]		5,9					
w [%] | w_F [%]**		15,1					
density kN/m^3	moist						
	dry						
shear strength, fall cone kN/m^2	Undrained./ Su						
	Drained/ Sd						
	sensitivity						
fineness number F							
Attenberg limits	plastic limit, W_p						
	liquid limit, W_L						
	plasticity index I_P						
organic content [%]***							
frost susceptibility, grain size							
laboratory investigations	researcher	MH					
	start date	20.2.2025					
	end date						

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

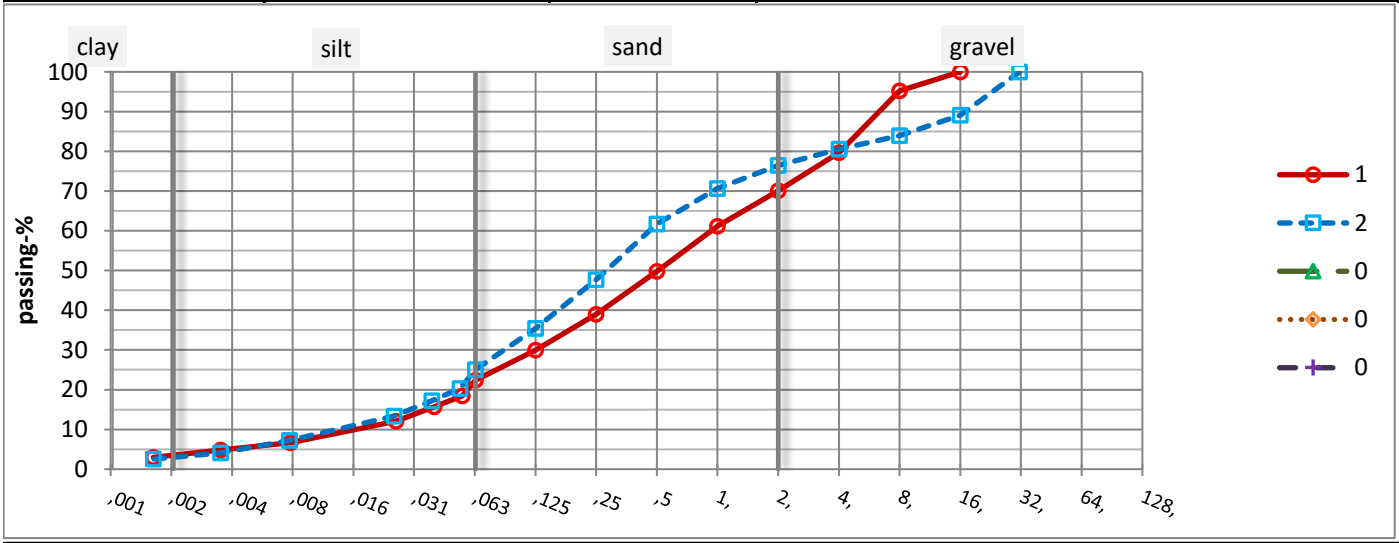
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H11	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H11	H11			
	depth [m]	1	2			
	Sampler/ quality class*					
	date	1.2.2025	1.2.2025			
	researcher	EV	EV			
*Laboratory determined						
soil type	visual assesment					
	CEN-ISO	grsiSa	grsiSa			
	Geotechnical	HkMr	HkMr			
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving			
clay content [%]		3,5	3,0			
w [%] | w_F [%]**		7,6	5,9			
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH			
	start date	20.2.2025	20.2.2025			
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x	client	x	project folder		also:	

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

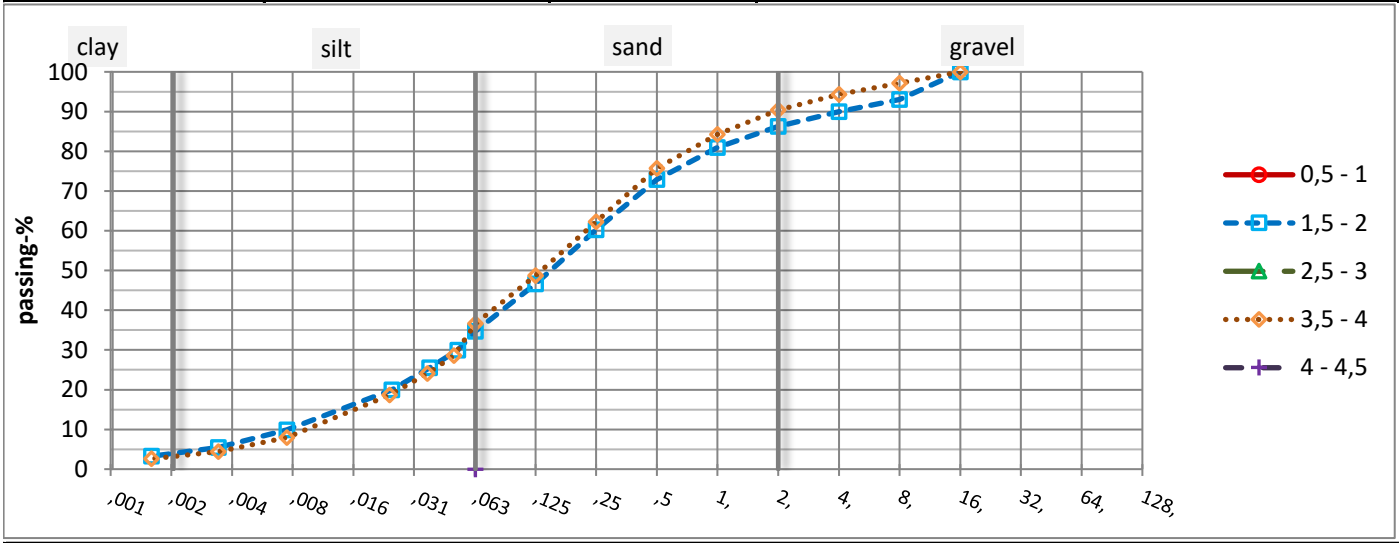
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H13	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H13	H13	H13	H13	H13
	depth [m]	0,5 - 1	1,5 - 2	2,5 - 3	3,5 - 4	4 - 4,5
	Sampler/ quality class*					
	date	10.12.2024	10.12.2024	10.12.2024	10.12.2024	10.12.2024
	researcher	SI	SI	SI	SI	SI
*Laboratory determined						
soil type	visual assesment	siHkMr		siHkMr		siHkMr
	CEN-ISO		siSa		siSa	
	Geotechnical		siHkMr		siHkMr	
	sulfide soil					
	notes					
particle size determination			hydrometer & wet sieving		hydrometer & wet sieving	
clay content [%]			4,0		3,2	
w [%] | w_F [%]**		12,3	11,6	10,7	11,4	8,8
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC	OC	OC	OC
	start date	27.12.2024	27.12.2024	27.12.2024	27.12.2024	27.12.2024
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: [x] client [x] project folder [ ] also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

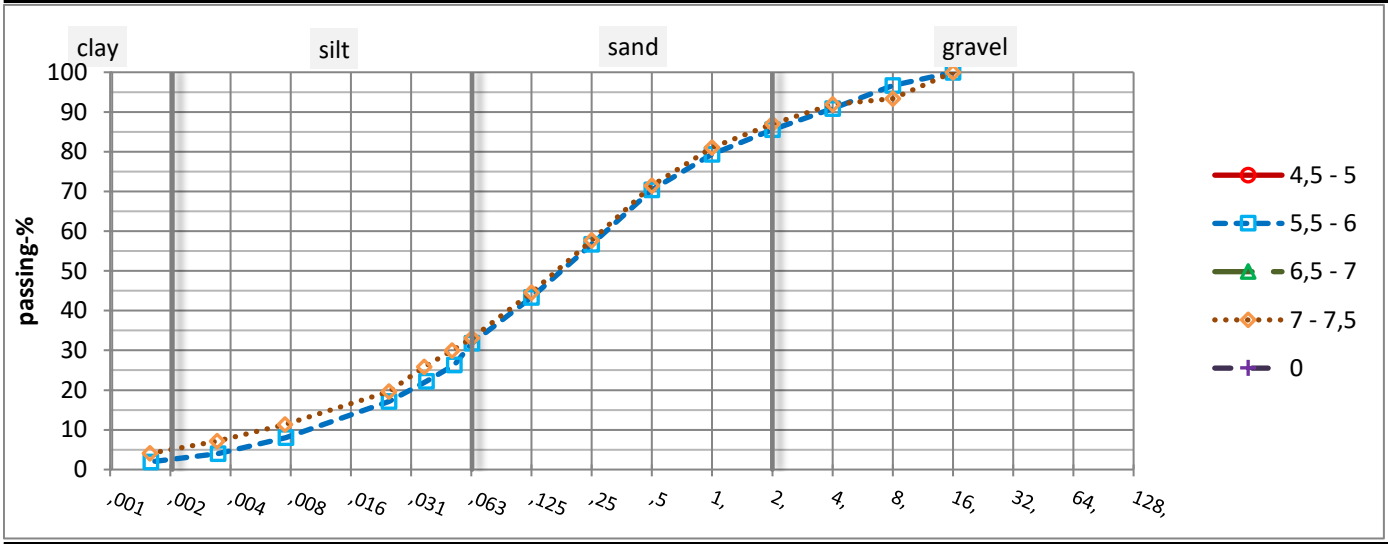
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H13	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H13	H13	H13	H13	
	depth [m]	4,5 - 5	5,5 - 6	6,5 - 7	7 - 7,5	
	Sampler/ quality class*					
	date	10.12.2024	10.12.2024	10.12.2024	10.12.2024	
	researcher	SI	SI	SI	SI	
*Laboratory determined						
soil type	visual assesment	siHkMr		HkMr		
	CEN-ISO		siSa		siSa	
	Geotechnical		HkMr		HkMr	
	sulfide soil					
	notes					
particle size determination			hydrometer & wet sieving		hydrometer & wet sieving	
clay content [%]			2,6		5,1	
w [%] | w_F [%]**		11,7	11,1	10,6	12,1	
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC	OC	OC	
	start date	27.12.2024	27.12.2024	27.12.2024	27.12.2024	
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

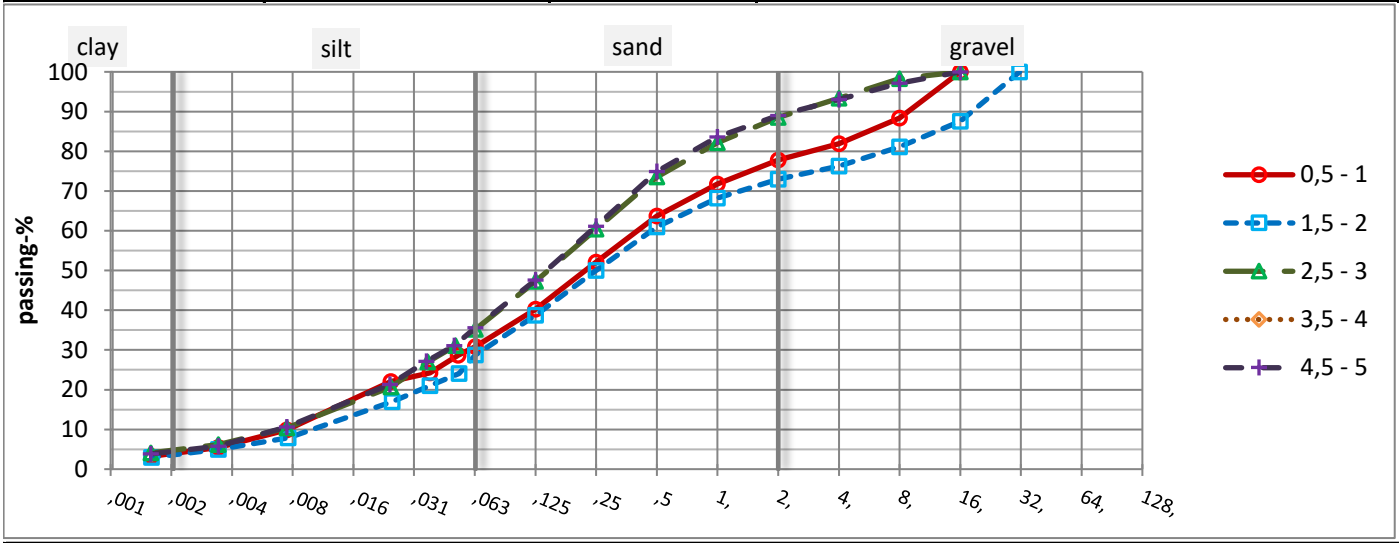
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H14	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H14	H14	H14	H14	H14
	depth [m]	0,5 - 1	1,5 - 2	2,5 - 3	3,5 - 4	4,5 - 5
	Sampler/ quality class*					
	date	11.12.2024	11.12.2024	11.12.2024	11.12.2024	11.12.2024
	researcher	IS	IS	IS	IS	IS
*Laboratory determined						
soil type	visual assesment				siHkMr	
	CEN-ISO	grsiSa	grsiSa	siSa		siSa
	Geotechnical	HkMr	HkMr	siHkMr		siHkMr
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving	hydrometer & wet sieving		hydrometer & wet sieving
clay content [%]		4,0	3,6	4,8		4,5
w [%] | w_F [%]**		12,0	10,7	12,6	10,2	10,4
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC	OC	OC	OC
	start date	27.12.2024	27.12.2024	27.12.2024	27.12.2024	27.12.2024
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: [x] client [x] project folder [ ] also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

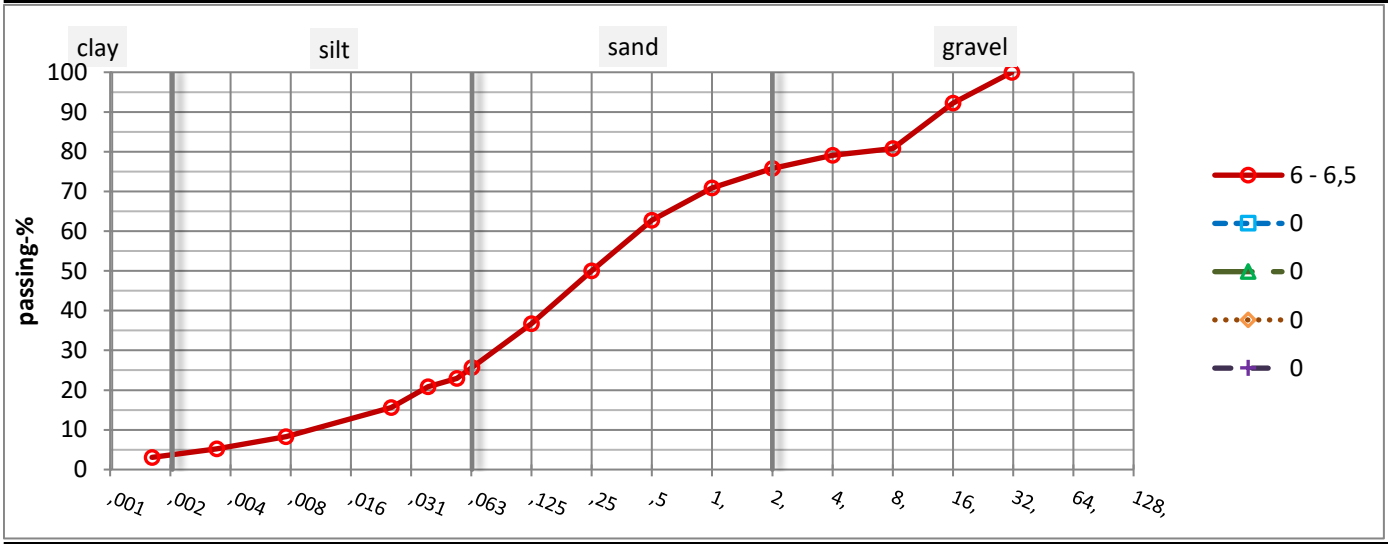
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H14	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H14				
	depth [m]	6 - 6,5				
	Sampler/ quality class*					
	date	11.12.2024				
	researcher	IS				
*Laboratory determined						
soil type	visual assesment					
	CEN-ISO	grsiSa				
	Geotechnical	HkMr				
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving				
clay content [%]		3,8				
w [%] | w_F [%]**		9,6				
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC				
	start date	27.12.2024				
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: [x] client [x] project folder [ ] also:

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

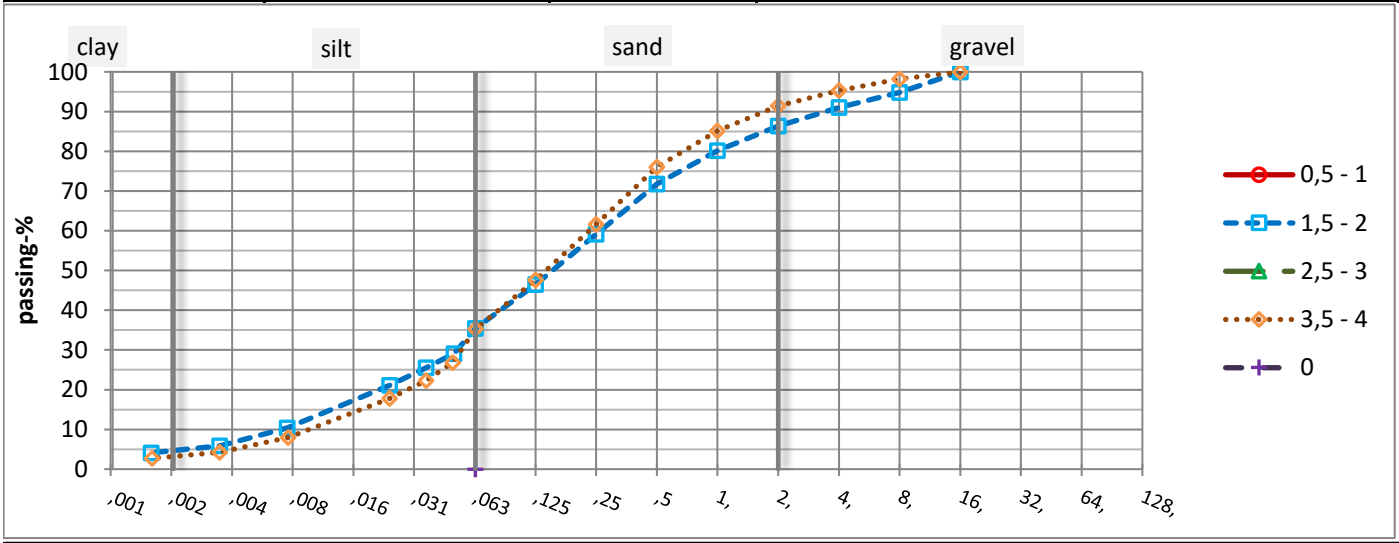
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H17	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H17	H17	H17	H17	
	depth [m]	0,5 - 1	1,5 - 2	2,5 - 3	3,5 - 4	
	Sampler/ quality class*					
	date	14.11.2024	14.11.2024	14.11.2024	14.11.2024	
	researcher	MK	MK	MK	MK	
*Laboratory determined						
soil type	visual assesment	srHkMr		HkMr		
	CEN-ISO		siSa		siSa	
	Geotechnical		siHkMr		siHkMr	
	sulfide soil					
	notes					
particle size determination			hydrometer & wet sieving		hydrometer & wet sieving	
clay content [%]			4,7		3,2	
w [%] | w_F [%]**			8,5		12,5	
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	RÄ	RÄ	RÄ	RÄ	
	start date	12.12.2024	12.12.2024	12.12.2024	12.12.2024	
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

Sample observations and anomalies:	

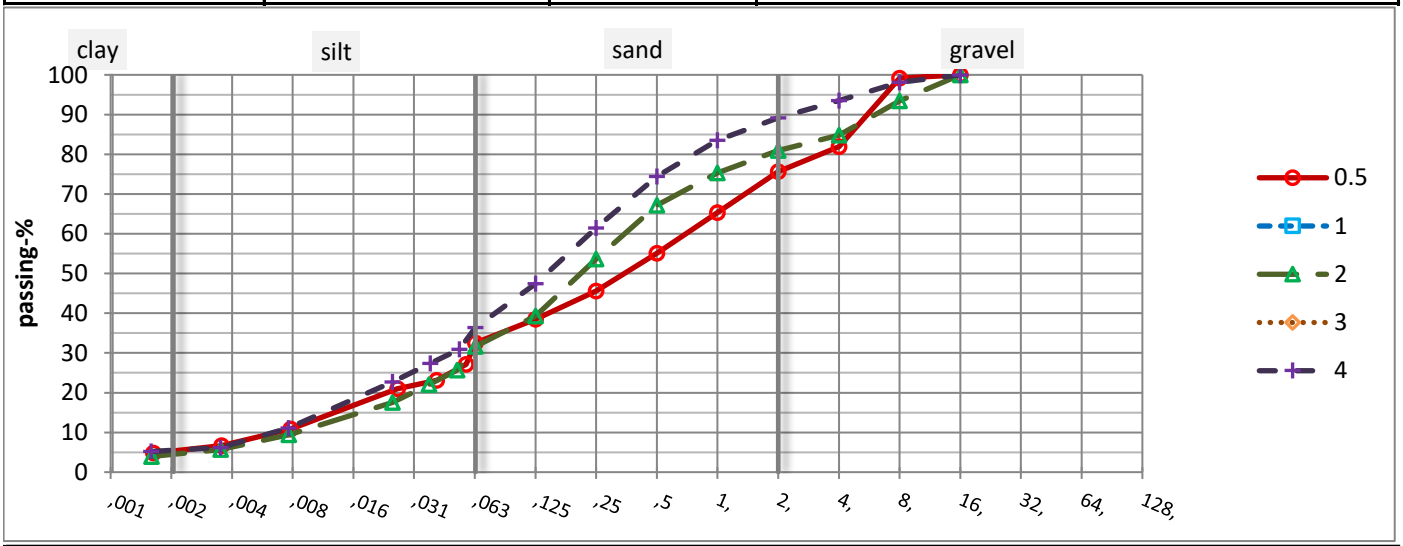
Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

TEST REPORT
SOIL SAMPLES

Project	21 738	Point number	H22	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H22	H22	H22	H22	H22
	depth [m]	0.5	1	2	3	4
	Sampler/ quality class*					
	date	15.1.2024	15.1.2024	15.1.2024	15.1.2024	15.1.2024
	researcher	DL	DL	DL	DL	DL
*Laboratory determined						
soil type	visual assesment		HkMr		HkMr	
	CEN-ISO	grsiSa		siSa		siSa
	Geotechnical	HkMr		HkMr		siHkMr
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving		hydrometer & wet sieving		hydrometer & wet sieving
clay content [%]		5,3		4,5		5,5
w [%] | w_F [%]**		37,0	14,4	13,2	12,8	10,2
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH	MH	MH
	start date	25.2.2025	25.2.2025	25.2.2025	25.2.2025	25.2.2025
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x	client	x	project folder		also:	

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

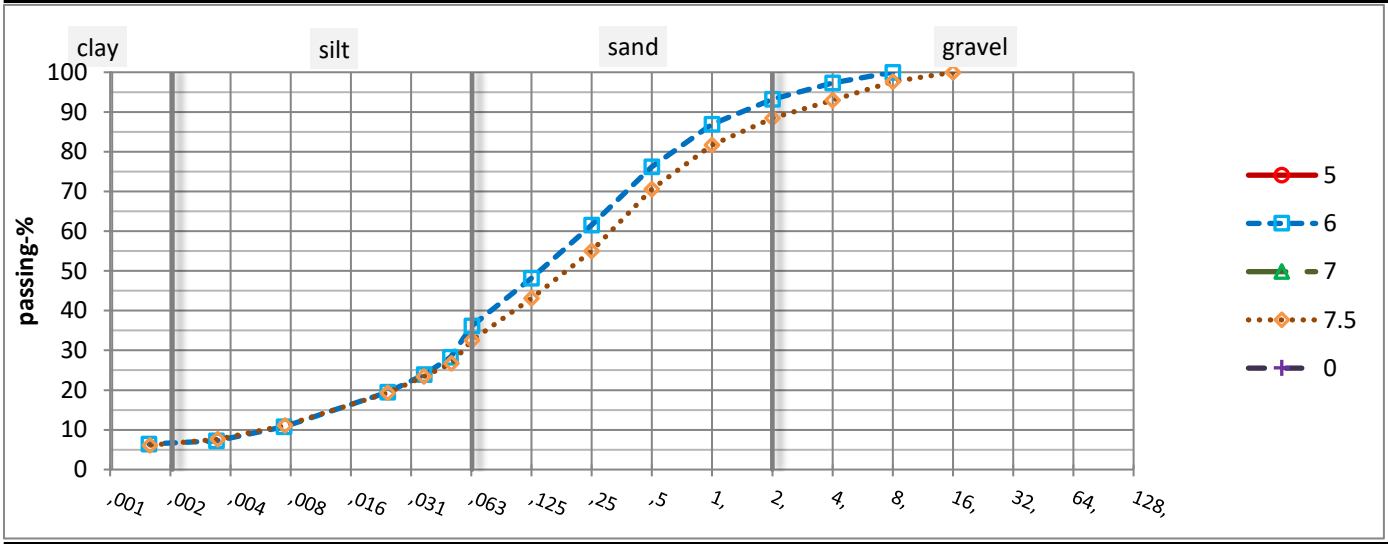
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H22	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H22	H22	H22	H22	
	depth [m]	5	6	7	7.5	
	Sampler/ quality class*					
	date	15.1.2024	15.1.2024	15.1.2024	15.1.2024	
	researcher	DL	DL	DL	DL	
*Laboratory determined						
soil type	visual assesment	Hk		HkMr		
	CEN-ISO		siSa		siSa	
	Geotechnical		HkMr		HkMr	
	sulfide soil notes					
particle size determination			hydrometer & wet sieving		hydrometer & wet sieving	
clay content [%]			6,7		6,6	
w [%] | w_F [%]**			8,8		10,7	
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH	MH	
	start date	25.2.2025	25.2.2025	25.2.2025	25.2.2025	
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x	client	x	project folder	also:
research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of laboratory testing:			Tomi Sahlman		

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

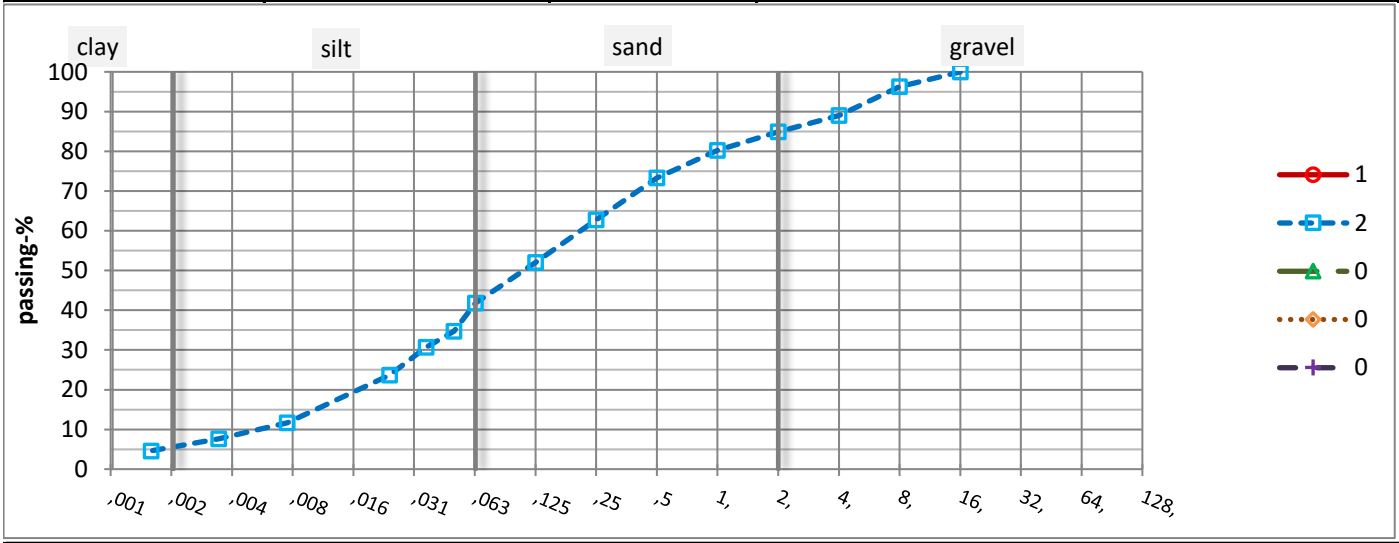
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H25	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H25	H25			
	depth [m]	1	2			
	Sampler/ quality class*					
	date	9.12.2024	9.12.2024			
	researcher	IS	IS			
*Laboratory determined						
soil type	visual assesment	siHkMr				
	CEN-ISO		saclSi			
	Geotechnical		siHkMr			
	sulfide soil					
	notes					
particle size determination			hydrometer & wet sieving			
clay content [%]			5,6			
w [%] | w_F [%]**		7,2	8,2			
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC			
	start date	30.12.2024	30.12.2024			
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

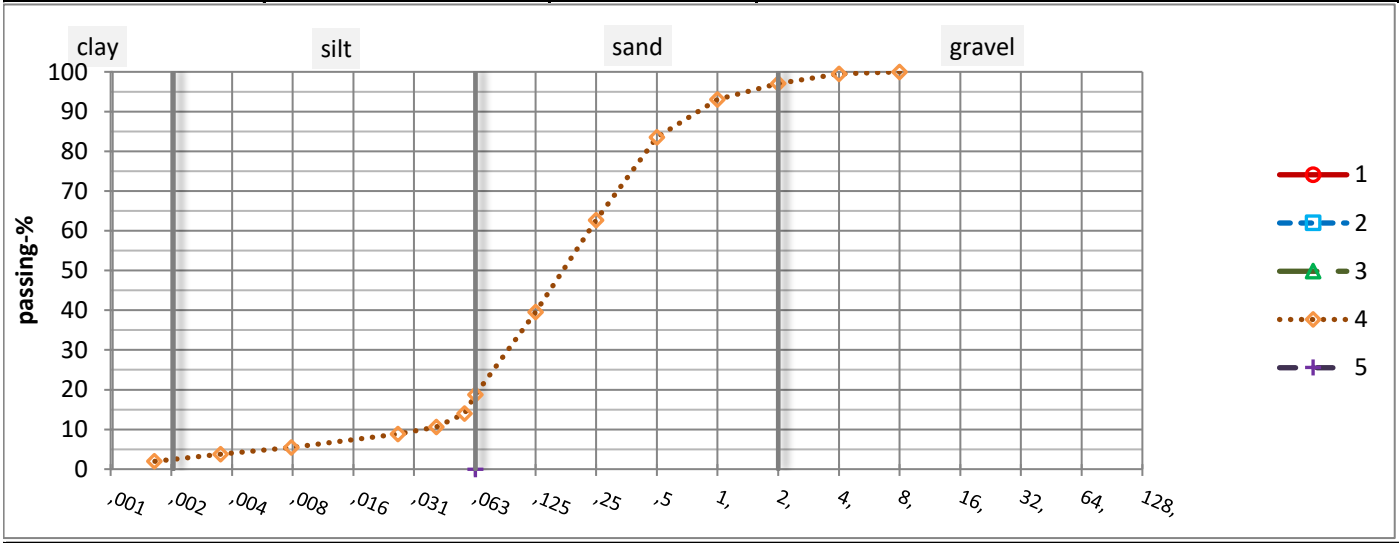
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H26	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H26	H26	H26	H26	H26
	depth [m]	1	2	3	4	5
	Sampler/ quality class*					
	date	29.1.2025	29.1.2025	29.1.2025	29.1.2025	29.1.2025
	researcher	EV	EV	EV	EV	EV
*Laboratory determined						
soil type	visual assesment	RTv	MTv	HkMr		Hk
	CEN-ISO	Or	Or		siSa	
	Geotechnical				Hk	
	sulfide soil					
	notes					
particle size determination					hydrometer & wet sieving	
clay content [%]					2,5	
w [%] | w_F [%]**		542,6	687,4		15,7	
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH	MH	MH
	start date	20.2.2025	20.2.2025	20.2.2025	20.2.2025	20.2.2025
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

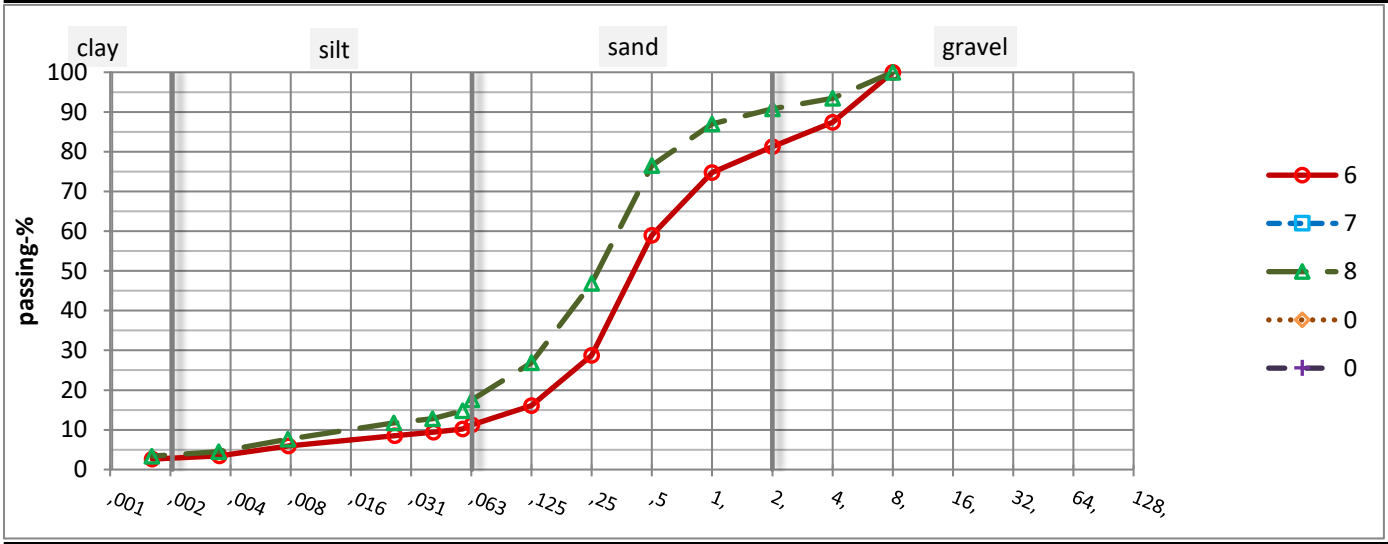
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H26	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H26	H26	H26		
	depth [m]	6	7	8		
	Sampler/ quality class*					
	date	29.1.2025	29.1.2025	29.1.2025		
	researcher	EV	EV	EV		
*Laboratory determined						
soil type	visual assesment		HkMr			
	CEN-ISO	Sa		clSa		
	Geotechnical	HkMr		HkMr		
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving		hydrometer & wet sieving		
clay content [%]		2,9		3,7		
w [%] | w_F [%]**		11,0		14,4		
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH		
	start date	20.2.2025	20.2.2025	20.2.2025		
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x	client	x	project folder		also:	

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Stamdards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

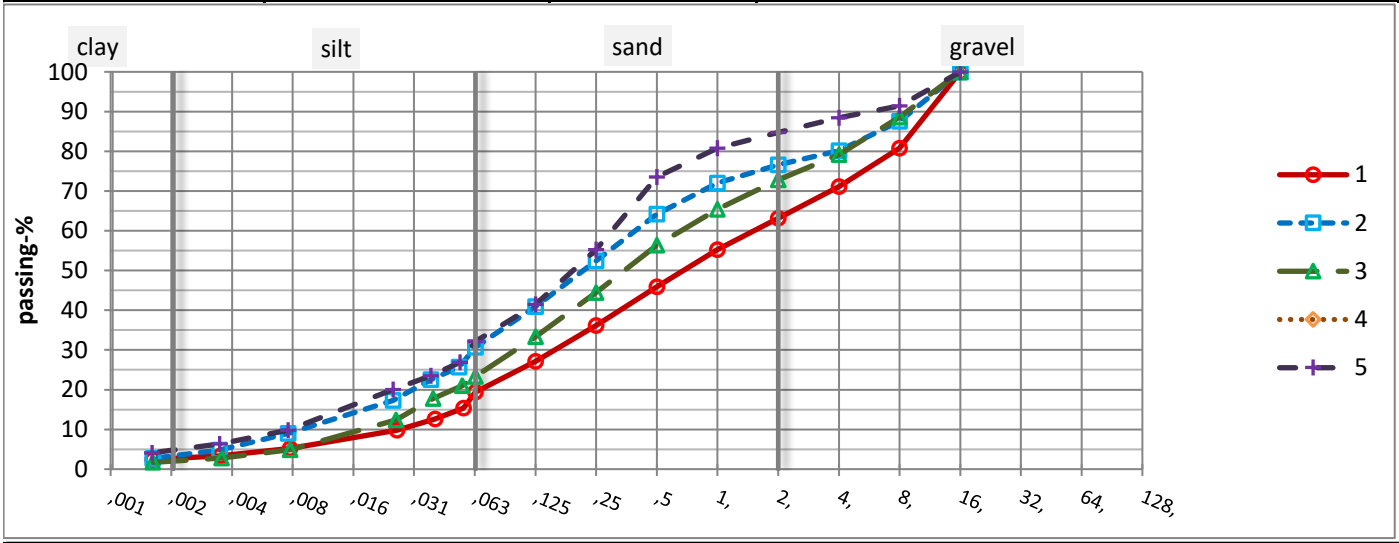
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H29	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H29	H29	H29	H29	H29
	depth [m]	1	2	3	4	5
	Sampler/ quality class*					
	date	5.12.2024	5.12.2024	5.12.2024	5.12.2024	5.12.2024
	researcher	OL	OL	OL	OL	OL
*Laboratory determined						
soil type	visual assesment				siHkMr	
	CEN-ISO	grsiSa	grsiSa	grsiSa		siSa
	Geotechnical	srHkMr	HkMr	HkMr		HkMr
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving	hydrometer & wet sieving		hydrometer & wet sieving
clay content [%]		2,7	3,4	2,0		4,8
w [%] | w_F [%]**		17,8	12,8	7,7	10,5	10,4
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC	OC	OC	OC
	start date	30.12.2024	30.12.2024	30.12.2024	30.12.2024	30.12.2024
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: [x] client [x] project folder [ ] also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

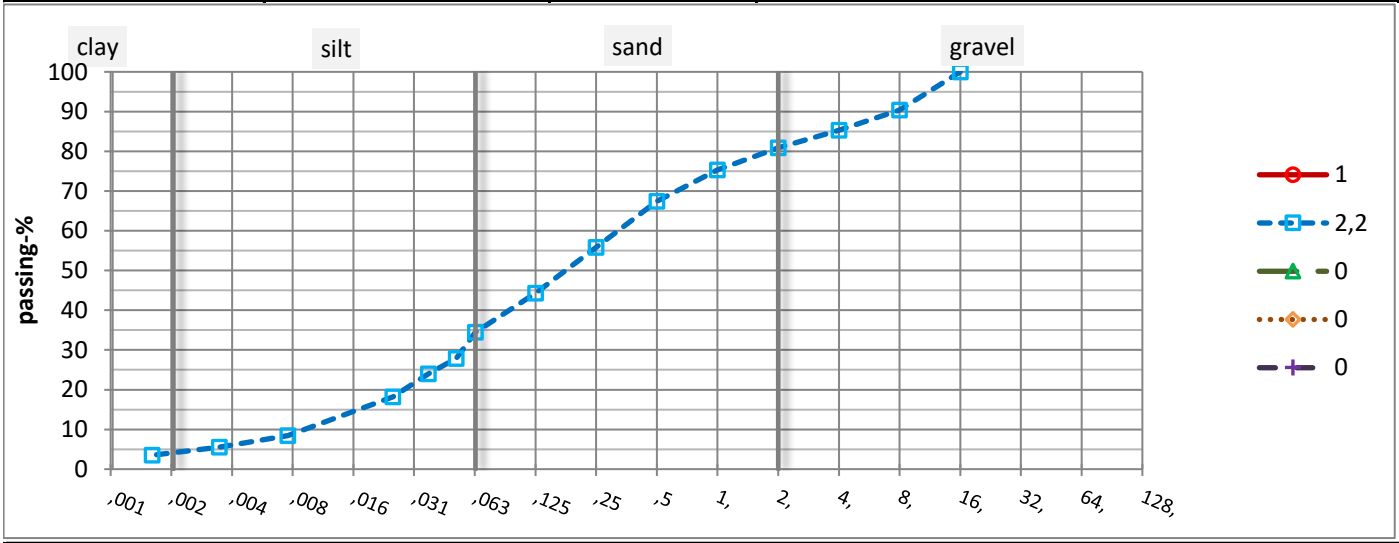
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H32	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H32	H32			
	depth [m]	1	2,2			
	Sampler/ quality class*					
	date	17.12.2024	17.12.2024			
	researcher	NP	NP			
*Laboratory determined						
soil type	visual assesment	Tv				
	CEN-ISO	Or	siSa			
	Geotechnical		siHkMr			
	sulfide soil					
	notes					
particle size determination			hydrometer & wet sieving			
clay content [%]			4,1			
w [%] | w_F [%]**		530,8	7,1			
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC			
	start date	31.12.2024	31.12.2024			
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x client	x project folder		also:	
research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of laboratory testing:			Tomi Sahlman		

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

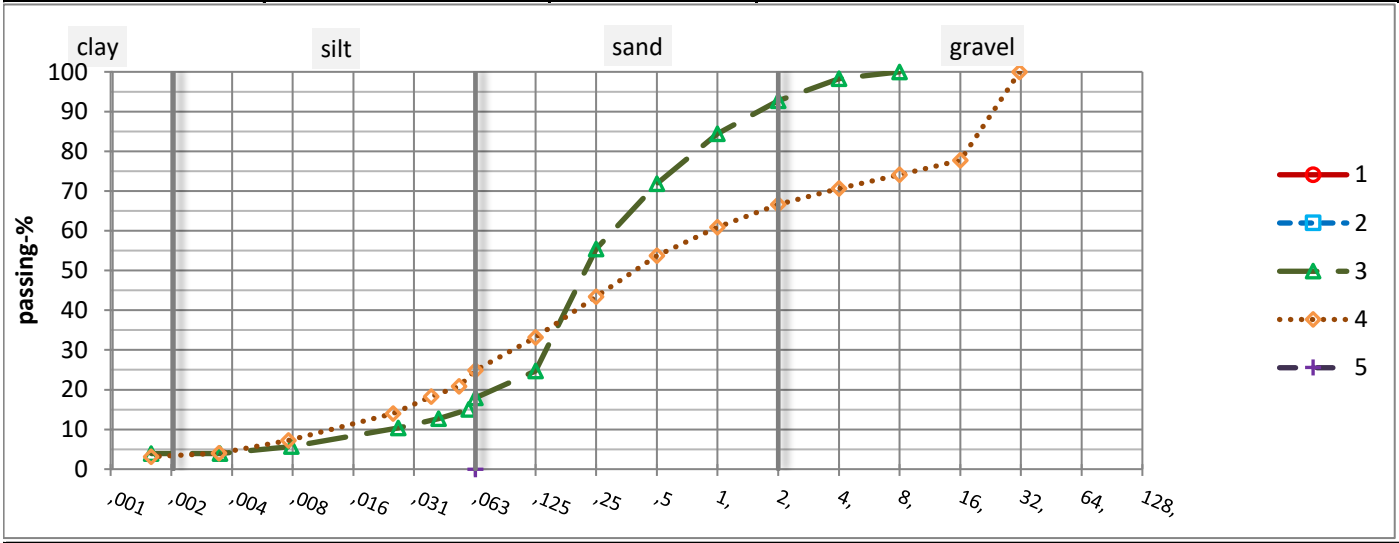
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H33	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H33	H33	H33	H33	H33
	depth [m]	1	2	3	4	5
	Sampler/ quality class*					
	date	13.12.2024	13.12.2024	13.12.2024	13.12.2024	13.12.2024
	researcher	DL	DL	DL	DL	DL
*Laboratory determined						
soil type	visual assesment	RTv	RTv			HkMr
	CEN-ISO	Or	Or	clSa	grsiSa	
	Geotechnical			HkMr	srHkMr	
	sulfide soil					
	notes					
particle size determination				hydrometer & wet sieving	hydrometer & wet sieving	
clay content [%]				3,9	3,4	
w [%] | w_F [%]**		744,9	733,7	66,0	12,8	9,7
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH	MH	MH
	start date	26.2.2025	26.2.2025	26.2.2025	26.2.2025	26.2.2025
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

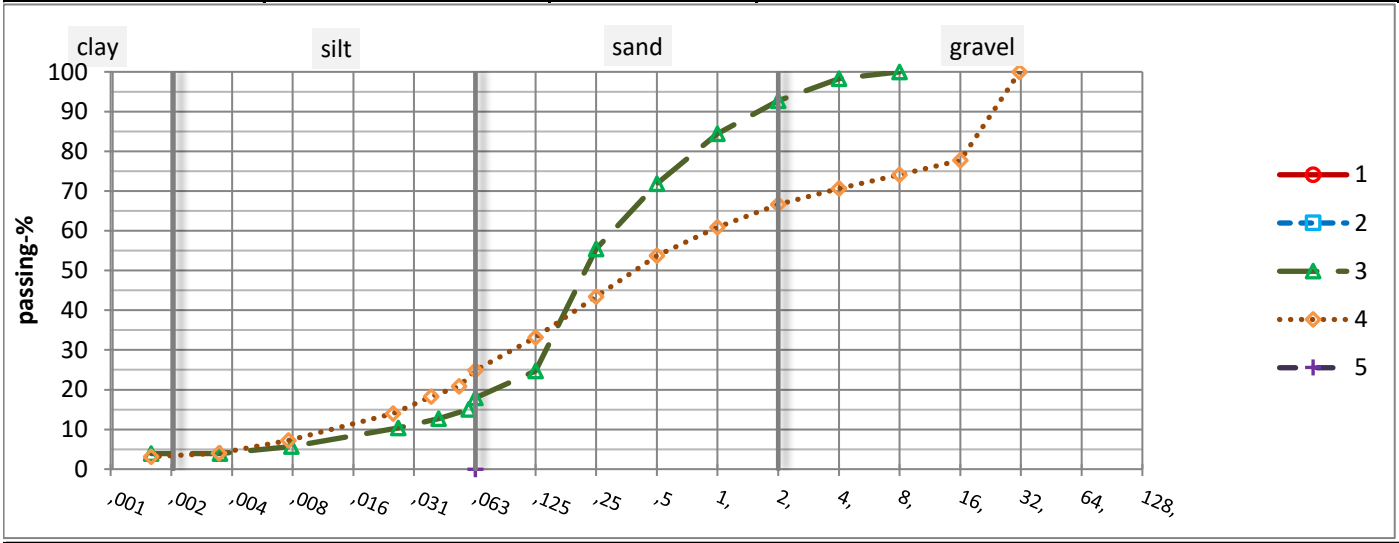
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H33	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H33	H33	H33	H33	H33
	depth [m]	1	2	3	4	5
	Sampler/ quality class*					
	date	13.12.2024	13.12.2024	13.12.2024	13.12.2024	13.12.2024
	researcher	DL	DL	DL	DL	DL
*Laboratory determined						
soil type	visual assesment	RTv	RTv			HkMr
	CEN-ISO	Or	Or	clSa	grsiSa	
	Geotechnical			HkMr	srHkMr	
	sulfide soil					
	notes					
particle size determination				hydrometer & wet sieving	hydrometer & wet sieving	
clay content [%]				3,9	3,4	
w [%] | w_F [%]**		744,9	733,7	66,0	12,8	9,7
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH	MH	MH
	start date	26.2.2025	26.2.2025	26.2.2025	26.2.2025	26.2.2025
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

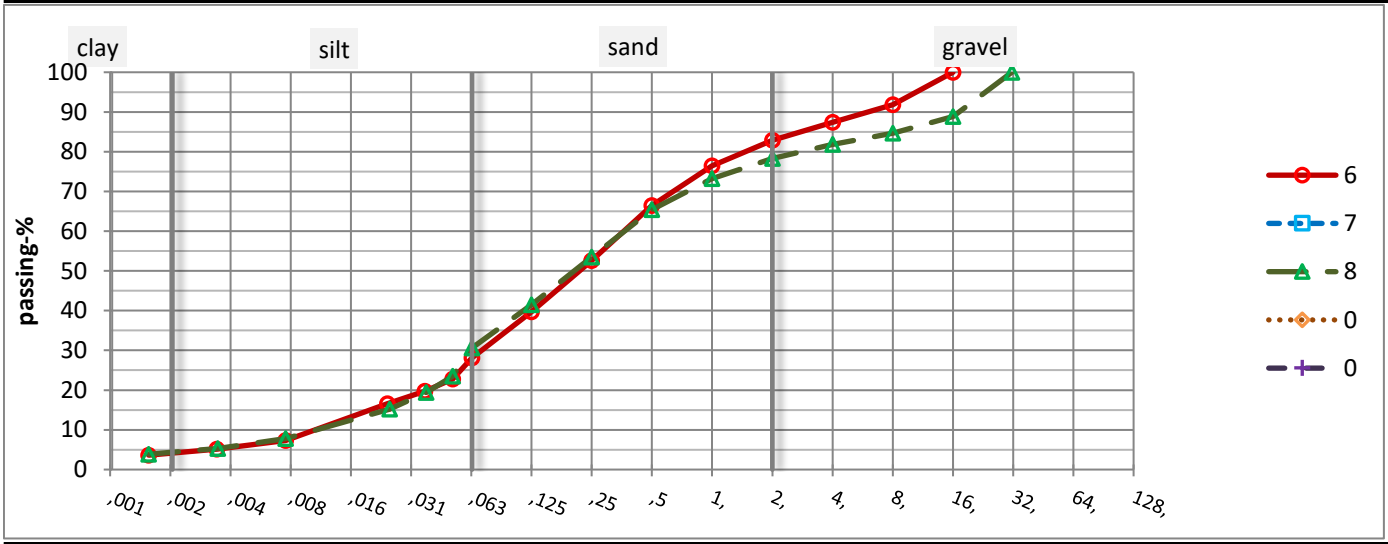
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H33	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H33	H33	H33		
	depth [m]	6	7	8		
	Sampler/ quality class*					
	date	13.12.2024	13.12.2024	13.12.2024		
	researcher	DL	DL	DL		
*Laboratory determined						
soil type	visual assesment		HkMr			
	CEN-ISO	siSa		grsiSa		
	Geotechnical	HkMr		HkMr		
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving		hydrometer & wet sieving		
clay content [%]		4,2		4,4		
w [%] | w_F [%]**		8,2	10,4	8,0		
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH		
	start date	26.2.2025	26.2.2025	26.2.2025		
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

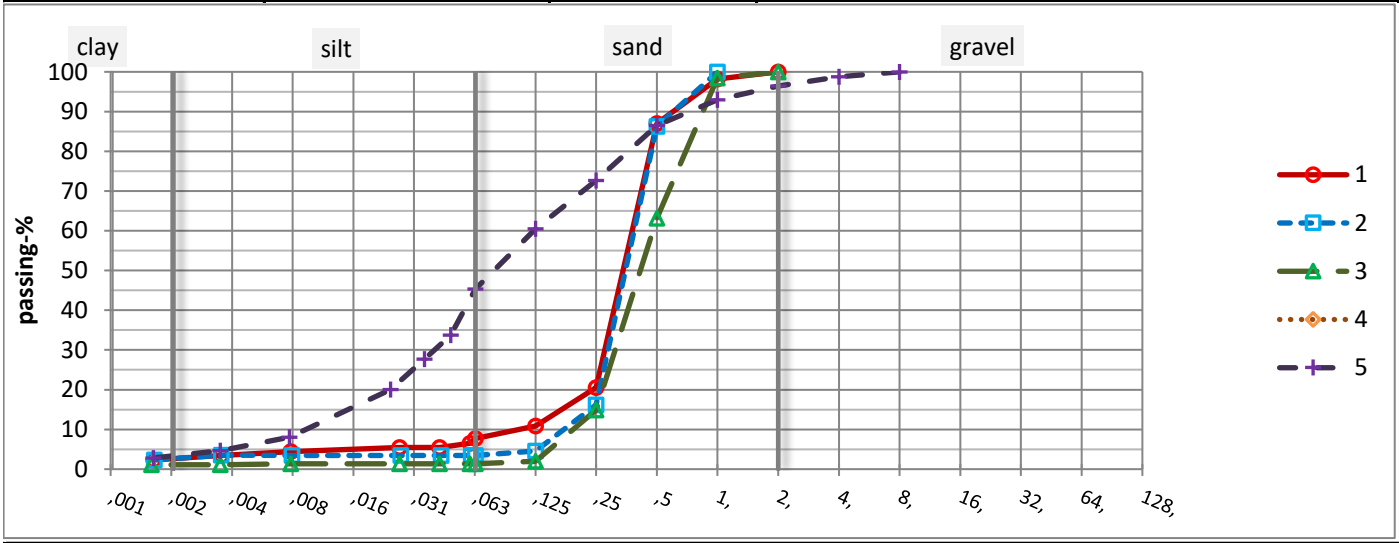
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H34	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H34	H34	H34	H34	H34
	depth [m]	1	2	3	4	5
	Sampler/ quality class*					
	date	28.1.2025	28.1.2025	28.1.2025	28.1.2025	28.1.2025
	researcher	EV	EV	EV	EV	EV
*Laboratory determined						
soil type	visual assesment				HkMr	
	CEN-ISO	Sa	Sa	Sa		saSi
	Geotechnical	Hk	Hk	Hk		siHk
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving	hydrometer & wet sieving		hydrometer & wet sieving
clay content [%]		2,6	2,7	1,1		3,4
w [%] | w_F [%]**		26,4	8,8	25,0		9,2
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***		1,4	0,8	0,6		
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH	MH	MH
	start date	19.2.2025	19.2.2025	19.2.2025	19.2.2025	19.2.2025
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

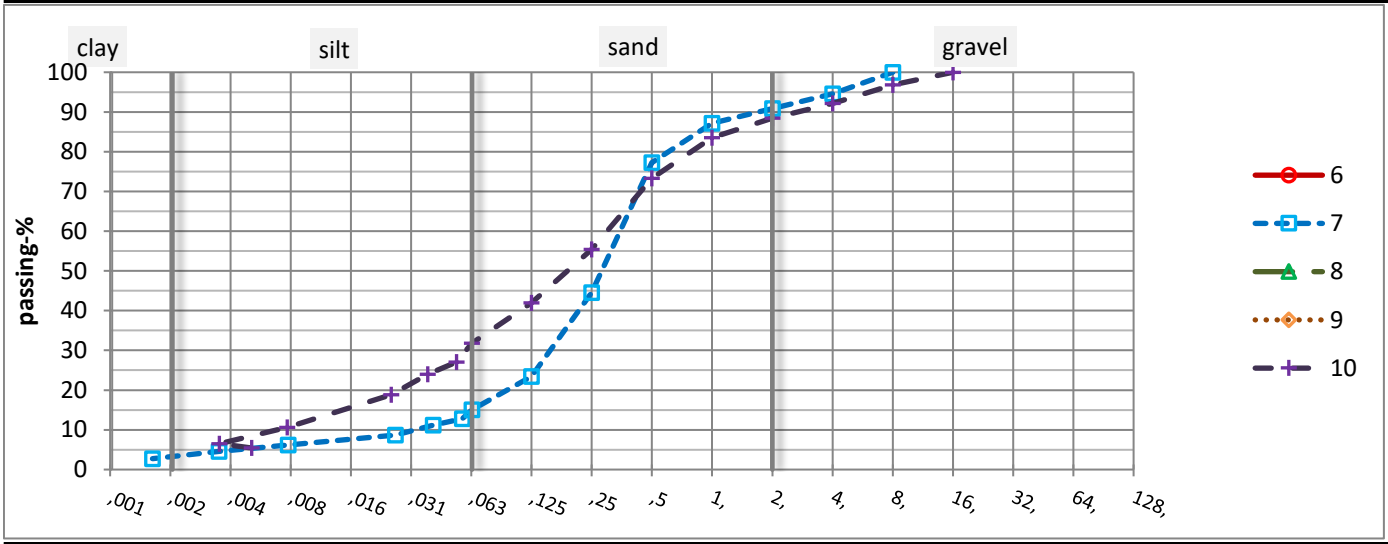
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H34	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H34	H34	H34	H34	H34
	depth [m]	6	7	8	9	10
	Sampler/ quality class*					
	date	28.1.2025	28.1.2025	28.1.2025	28.1.2025	28.1.2025
	researcher	EV	EV	EV	EV	EV
*Laboratory determined						
soil type	visual assesment	SiMr		HkMr	HkMr	
	CEN-ISO		Sa			clSa
	Geotechnical		HkMr			HkMr
	sulfide soil notes					
particle size determination			hydrometer & wet sieving			hydrometer & wet sieving
clay content [%]			3,3			8,2
w [%] | w_F [%]**		8,3	14,2			6,8
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH	MH	MH
	start date	19.2.2025	19.2.2025	19.2.2025	19.2.2025	19.2.2025
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information					
distrib:	x client	x project folder		also:	
research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of laboratory testing:			Tomi Sahlman		

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

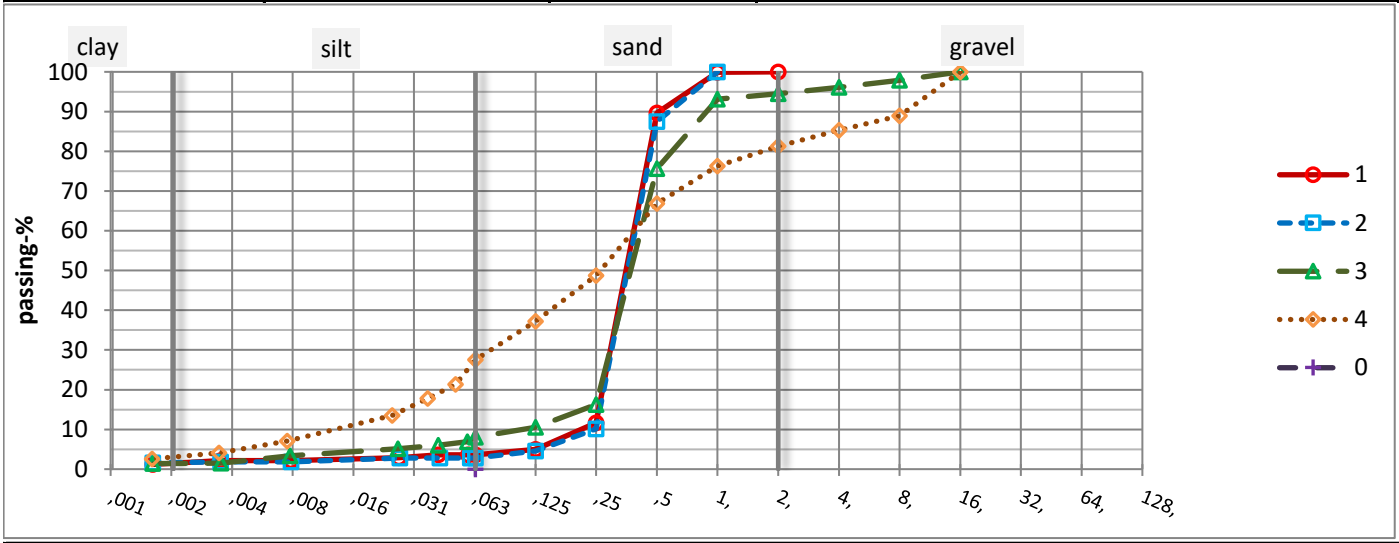
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H35	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H35	H35	H35	H35	
	depth [m]	1	2	3	4	
	Sampler/ quality class*					
	date	10.12.2024	10.12.2024	10.12.2024	10.12.2024	
	researcher	RI	RI	RI	RI	
*Laboratory determined						
soil type	visual assesment					
	CEN-ISO	Sa	Sa	Sa	siSa	
	Geotechnical	Hk	Hk	HkMr	HkMr	
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving	hydrometer & wet sieving	hydrometer & wet sieving	
clay content [%]		1,5	1,6	1,4	3,1	
w [%] | w_F [%]**		9,9	6,9	6,2	8,3	
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC	OC	OC	
	start date	2.1.2025	2.1.2025	2.1.2025	2.1.2025	
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x client	x project folder		also:	
research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of laboratory testing:			Tomi Sahlman		

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

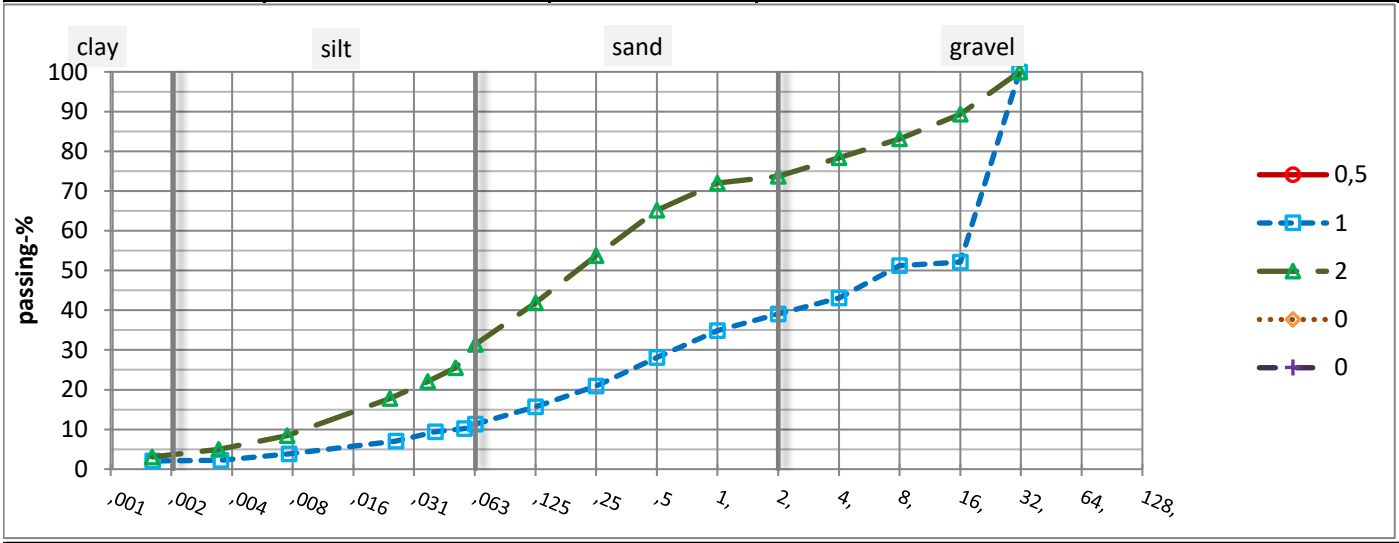
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H36	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H36	H36	H36		
	depth [m]	0,5	1	2		
	Sampler/ quality class*					
	date	10.12.2024	10.12.2024	10.12.2024		
	researcher	RI	RI	RI		
*Laboratory determined						
soil type	visual assesment	SrMr				
	CEN-ISO		saGr	grsiSa		
	Geotechnical		SrMr	HkMr		
	sulfide soil					
	notes					
particle size determination			hydrometer & wet sieving	hydrometer & wet sieving		
clay content [%]			2,1	3,7		
w [%] | w_F [%]**		8,8	8,6	9,7		
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC	OC		
	start date	2.1.2025	2.1.2025	2.1.2025		
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x	client	x	project folder		also:	
research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala					
Head of laboratory testing:				Tomi Sahlman			

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

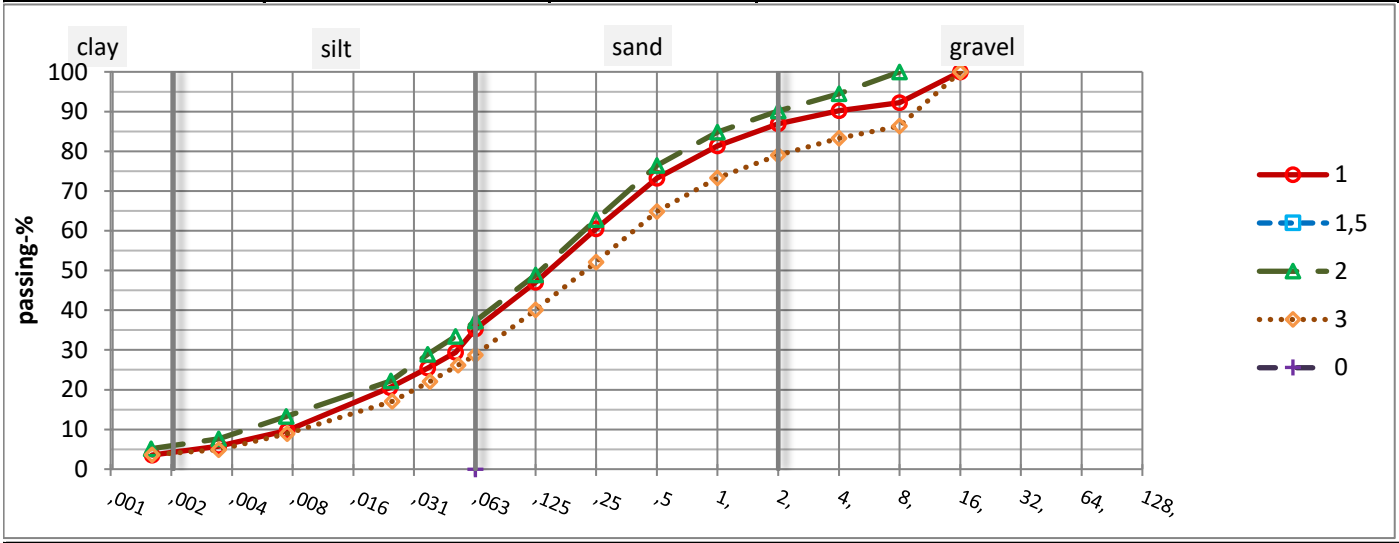
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H39	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H39	H39	H39	H39	
	depth [m]	1	1,5	2	3	
	Sampler/ quality class*					
	date	11.12.2024	11.12.2024	11.12.2024	11.12.2024	
	researcher	RI	RI	RI	RI	
*Laboratory determined						
soil type	visual assesment		siHkMr			
	CEN-ISO	siSa		siSa	grsiSa	
	Geotechnical	siHkMr		siHkMr	HkMr	
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving		hydrometer & wet sieving	hydrometer & wet sieving	
clay content [%]		4,3		6,0	4,0	
w [%] | w_F [%]**		6,2	3,8	10,5	6,8	
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_p					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC	OC	OC	
	start date	2.1.2025	2.1.2025	2.1.2025	2.1.2025	
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x client	x project folder		also:	
research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of laboratory testing:			Tomi Sahlman		

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

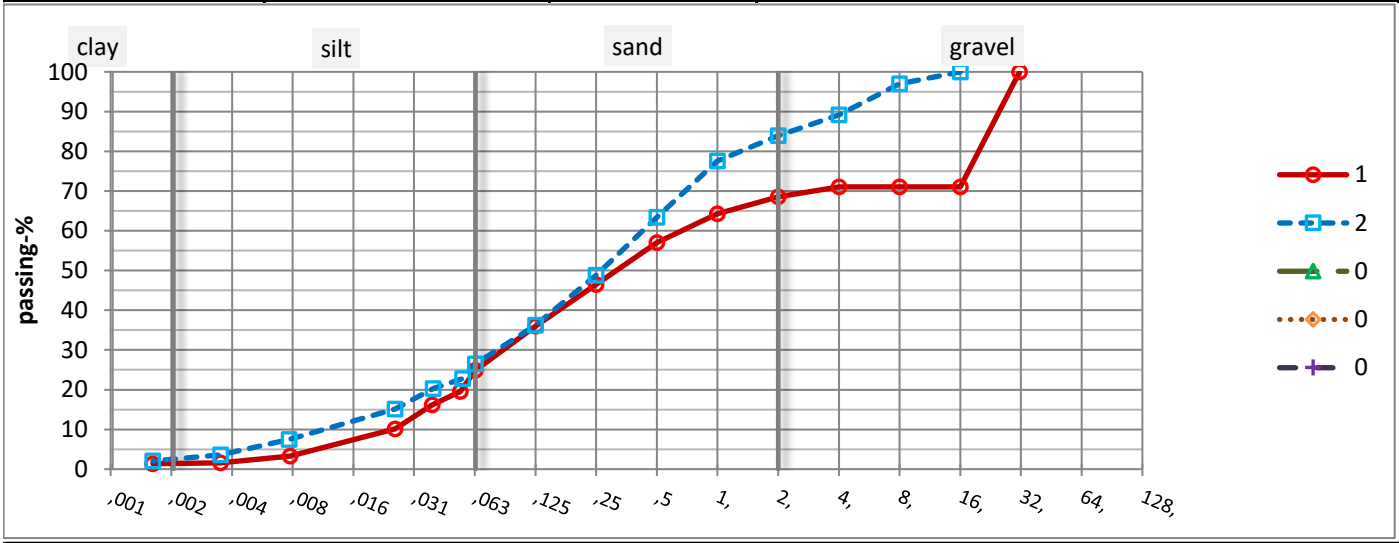
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H41	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H41	H41				
	depth [m]	1	2				
	Sampler/ quality class*						
	date	12.12.2024	12.12.2024				
	researcher	RI	RI				
*Laboratory determined							
soil type	visual assesment						
	CEN-ISO	grsiSa	siSa				
	Geotechnical	srHkMr	HkMr				
	sulfide soil						
	notes						
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving				
clay content [%]		1,4	2,5				
w [%] | w_F [%]**		15,7	12,1				
density kN/m^3	moist						
	dry						
shear strength, fall cone kN/m^2	Undrained./ Su						
	Drained/ Sd						
	sensitivity						
fineness number F							
Attenberg limits	plastic limit, W_p						
	liquid limit, W_L						
	plasticity index I_p						
organic content [%]***							
frost susceptibility, grain size							
laboratory investigations	researcher	OC	OC				
	start date	2.1.2025	2.1.2025				
	end date						

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

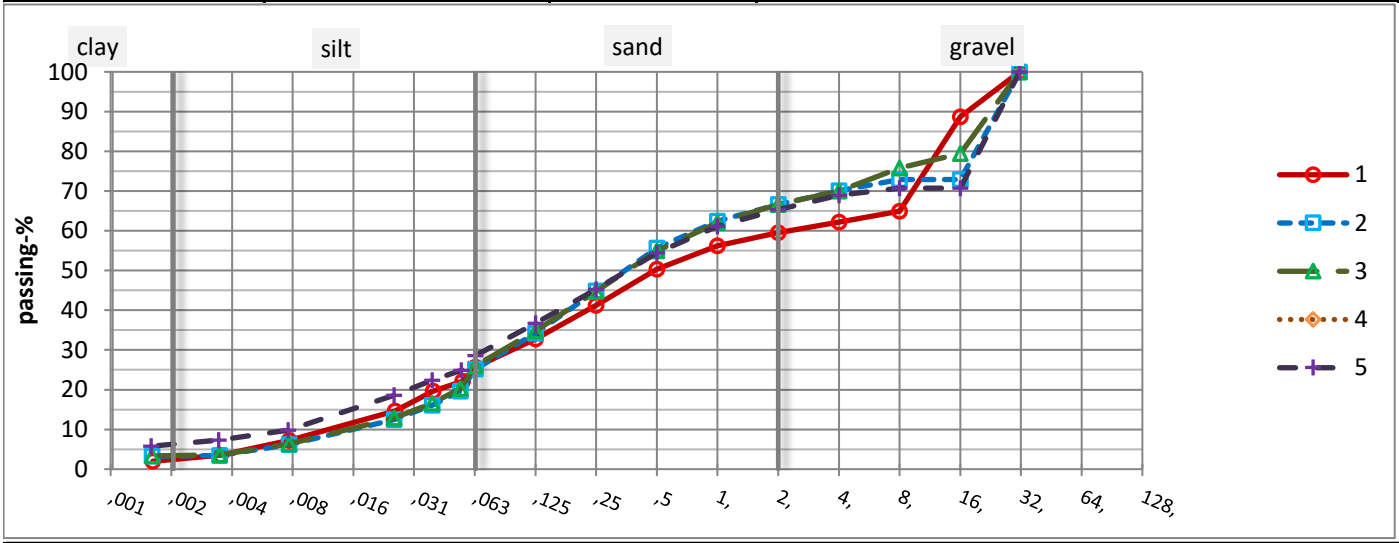
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H44	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H44	H44	H44	H44	H44
	depth [m]	1	2	3	4	5
	Sampler/ quality class*					
	date	13.12.2024	13.12.2024	13.12.2024	13.12.2024	13.12.2024
	researcher	RI	RI	RI	RI	RI
*Laboratory determined						
soil type	visual assesment				srHkMr	
	CEN-ISO	sasiGr	grsiSa	grsiSa		grsaclS
	Geotechnical	srHkMr	srHkMr	srHkMr		srHkMr
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving	hydrometer & wet sieving		hydrometer & wet sieving
clay content [%]		2,4	3,3	3,4		6,3
w [%] | w_F [%]**		6,3	9,3	10,5	12,9	10,2
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC	OC	OC	OC
	start date	2.1.2025	2.1.2025	2.1.2025	2.1.2025	2.1.2025
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: [x] client [x] project folder [ ] also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

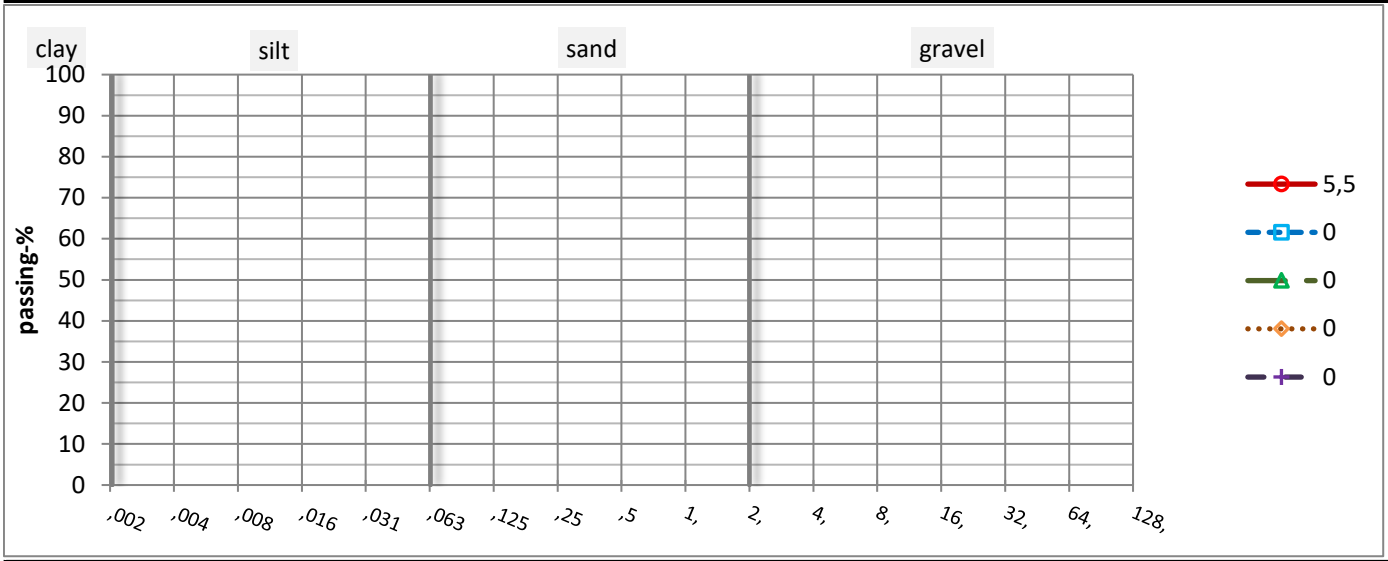
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H44	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H44				
	depth [m]	5,5				
	Sampler/ quality class*					
	date	13.12.2024				
	researcher	RI				
*Laboratory determined						
soil type	visual assesment	srHkMr				
	CEN-ISO					
	Geotechnical					
	sulfide soil					
	notes					
particle size determination						
clay content [%]						
w [%]| w_F [%]**		7,8				
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC				
	start date	2.1.2025				
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x client	x project folder		also:	
research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of laboratory testing:			Tomi Sahlman		

Tutkimustoiminnan analyysistandardit:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o}C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

Sample observations and anomalies:	

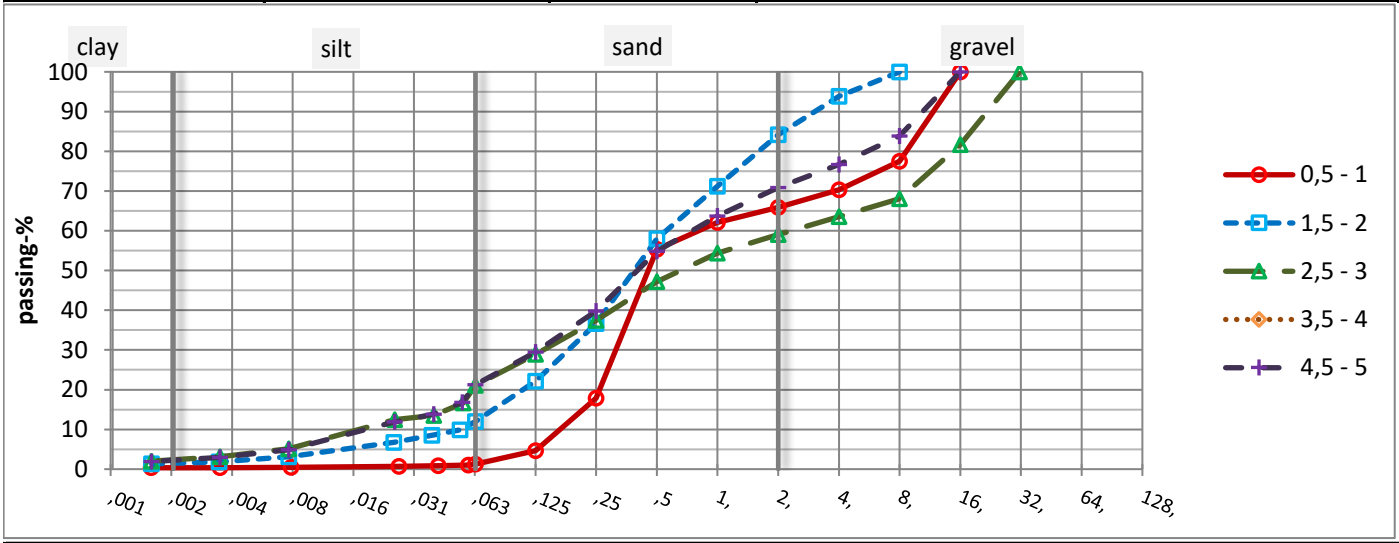
Optional images from samples:

1.	2.	3.
4.	5.	

1	
2	
3	
4	
5	

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H45	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H45	H45	H45	H45	H45
	depth [m]	0,5 - 1	1,5 - 2	2,5 - 3	3,5 - 4	4,5 - 5
	Sampler/ quality class*					
	date	12.12.2024	12.12.2024	12.12.2024	12.12.2024	12.12.2024
	researcher	IS	IS	IS	IS	IS
*Laboratory determined						
soil type	visual assesment				srHkMr	
	CEN-ISO	grSa	Sa	siGr		grsiSa
	Geotechnical	srHk	HkMr	srHkMr		HkMr
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving	hydrometer & wet sieving		hydrometer & wet sieving
clay content [%]		0,4	1,5	2,4		2,3
w [%] | w_F [%]**		26,3	38,1	6,0	7,7	8,9
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_p					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC	OC	OC	OC
	start date	27.12.2024	27.12.2024	27.12.2024	27.12.2024	27.12.2024
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib:	x	client	x	project folder		also:	

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

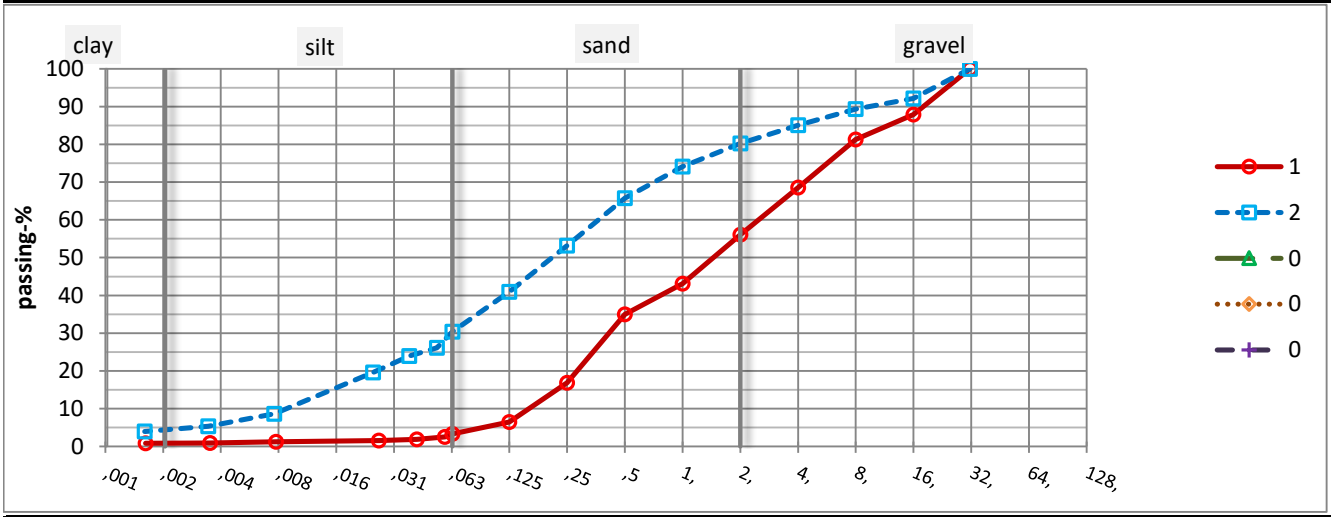
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H47	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H47	H47			
	depth [m]	1	2			
	Sampler/ quality class*					
	date	15.12.2024	15.12.2024			
	researcher	RI	RI			
*Laboratory determined						
soil type	visual assesment					
	CEN-ISO	grSa	siSa			
	Geotechnical	srHk	HkMr			
	sulfide soil notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving			
clay content [%]		0,9	4,4			
w [%]| w_F [%]**		38,1	11,2			
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC			
	start date	2.1.2025	2.1.2025			
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x client	x project folder		also:	
research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of laboratory testing:			Tomi Sahlman		

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

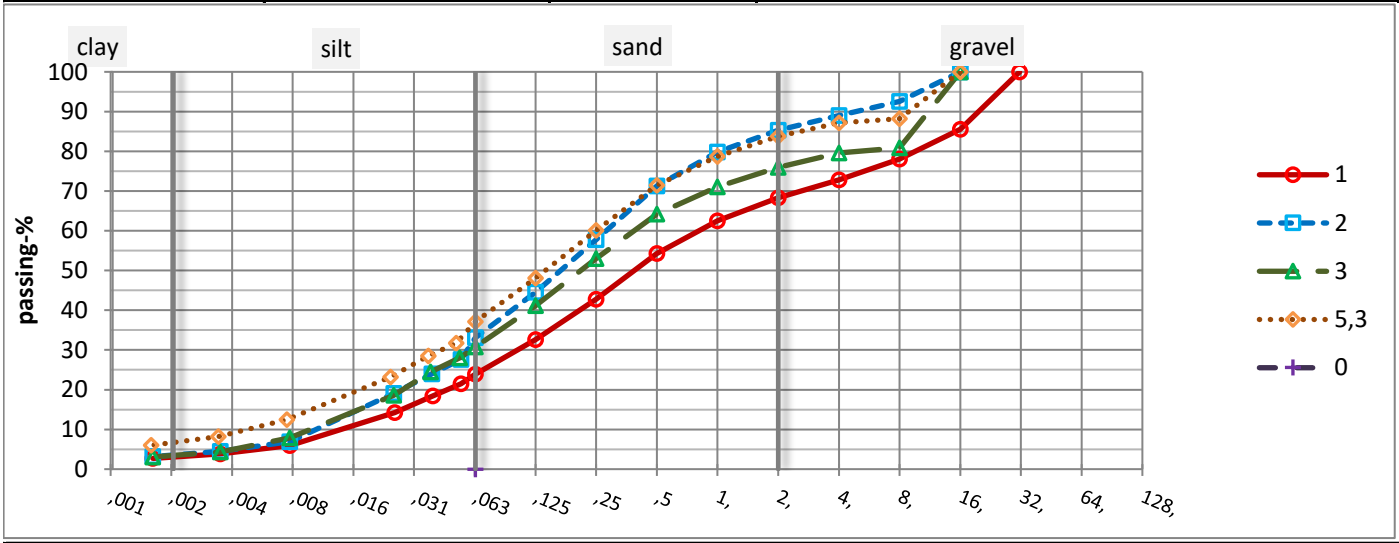
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H49	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H49	H49	H49	H49	
	depth [m]	1	2	3	5,3	
	Sampler/ quality class*					
	date	17.12.2024	17.12.2024	17.12.2024	17.12.2024	
	researcher	NP	NP	NP	NP	
*Laboratory determined						
soil type	visual assesment					
	CEN-ISO	grsiSa	siSa	grsiSa	siSa	
	Geotechnical	srHkMr	HkMr	HkMr	siHkMr	
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving	hydrometer & wet sieving	hydrometer & wet sieving	
clay content [%]		3,0	3,6	3,5	6,7	
w [%] | w_F [%]**		12,1	9,2	8,4	10,5	
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_p					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC	OC	OC	
	start date	31.12.2024	31.12.2024	31.12.2024	31.12.2024	
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: [x] client [x] project folder [ ] also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

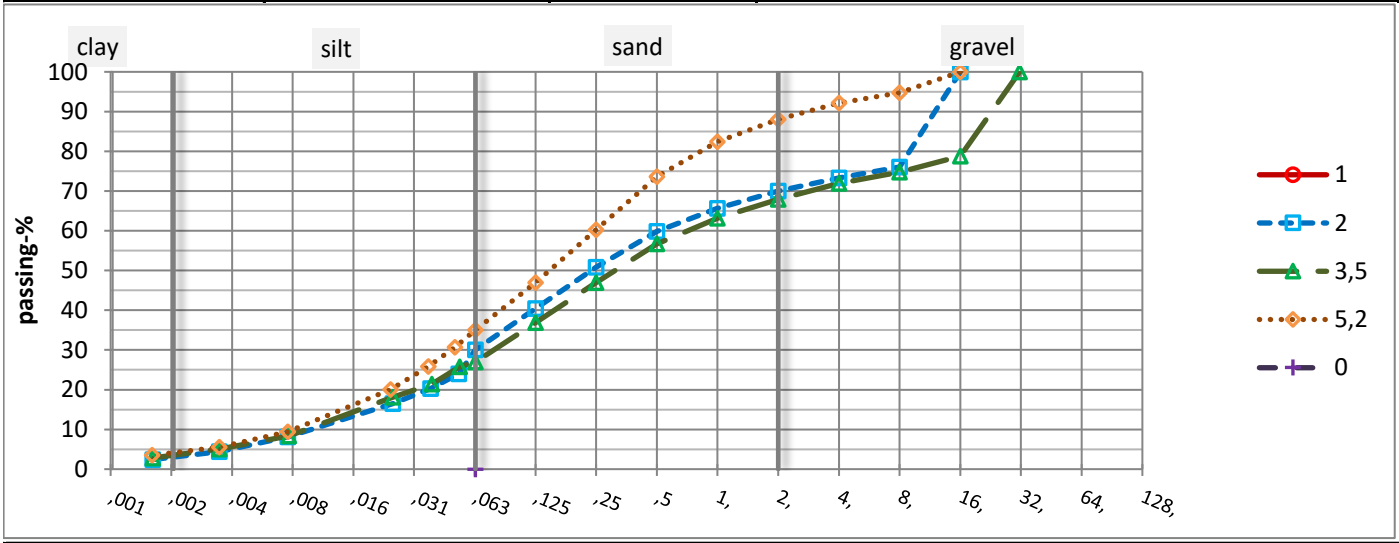
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H50	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	H50	H50	H50	H50	
	depth [m]	1	2	3,5	5,2	
	Sampler/ quality class*					
	date	17.12.2024	17.12.2024	17.12.2024	17.12.2024	
	researcher	NP	NP	NP	NP	
*Laboratory determined						
soil type	visual assesment	siHkMr				
	CEN-ISO		grsasiS	grsiSa	siSa	
	Geotechnical		HkMr	srHkMr	siHkMr	
	sulfide soil					
	notes					
particle size determination			hydrometer & wet sieving	hydrometer & wet sieving	hydrometer & wet sieving	
clay content [%]			3,0	3,5	4,1	
w [%] | w_F [%]**		7,1	6,8	9,3	7,0	
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_p					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	OC	OC	OC	OC	
	start date	30.12.2024	30.12.2024	30.12.2024	30.12.2024	
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x	client	x	project folder	also:
research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala			
Head of laboratory testing:				Tomi Sahlman	

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

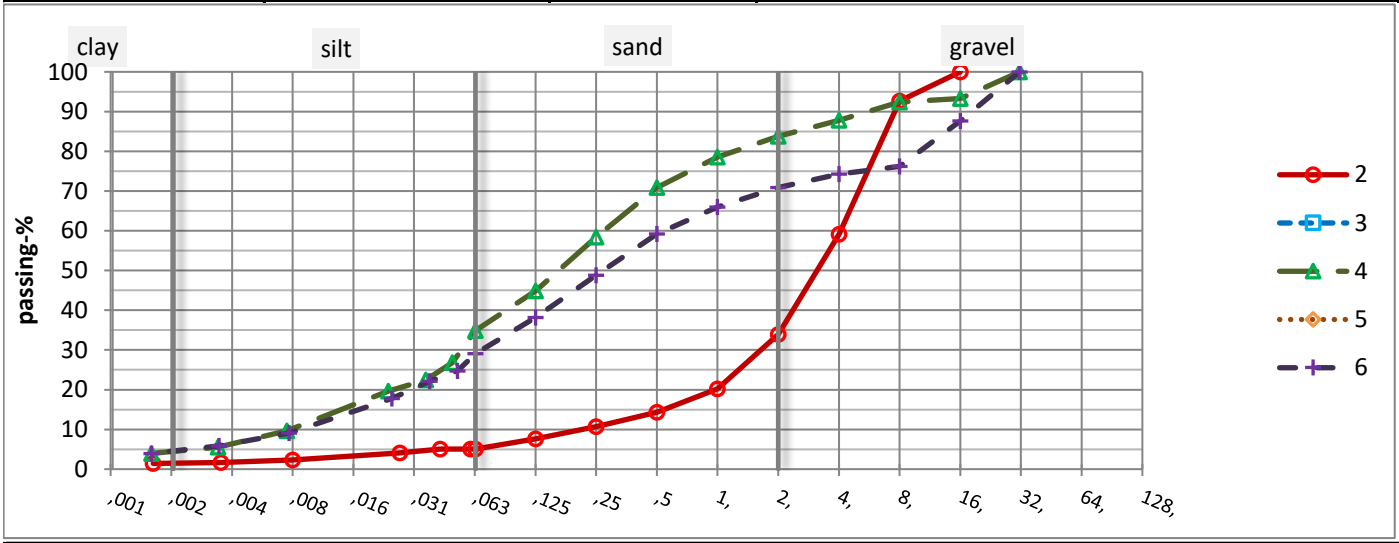
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H51	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H51	H51	H51	H51	H51
	depth [m]	2	3	4	5	6
	Sampler/ quality class*					
	date	31.1.2025	31.1.2025	31.1.2025	31.1.2025	31.1.2025
	researcher	NP	NP	NP	NP	NP
*Laboratory determined						
soil type	visual assesment		HkMr		HkMr	
	CEN-ISO	saGr		siSa		grsiSa
	Geotechnical	SrMr		siHkMr		HkMr
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving		hydrometer & wet sieving		hydrometer & wet sieving
clay content [%]		1,5		4,5		4,6
w [%] | w_F [%]**		2,6		4,2		4,0
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH	MH	MH
	start date	28.2.2025	28.2.2025	28.2.2025	28.2.2025	28.2.2025
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

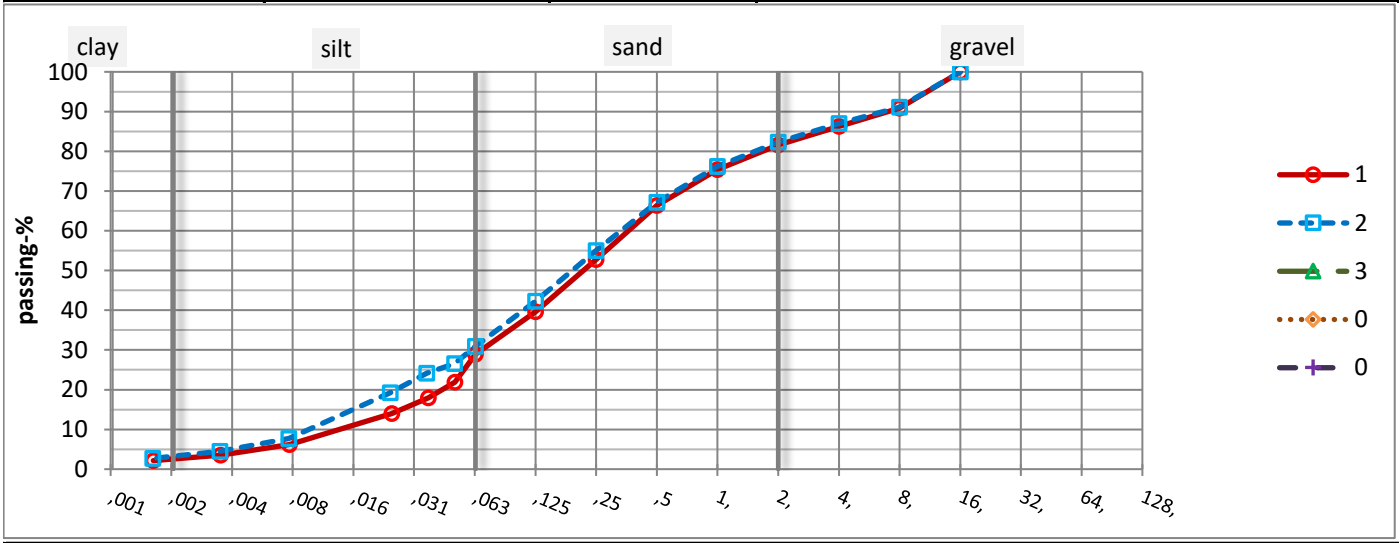
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H52	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H52	H52	H52		
	depth [m]	1	2	3		
	Sampler/ quality class*					
	date	2.2.2025	2.2.2025	2.2.2025		
	researcher	EV	EV	EV		
*Laboratory determined						
soil type	visual assesment			HkMr		
	CEN-ISO	siSa	siSa			
	Geotechnical	HkMr	HkMr			
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving			
clay content [%]		2,6	3,2			
w [%] | w_F [%]**		8,8	6,9			
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***		0,4	0,4			
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH		
	start date	21.2.2025	21.2.2025	21.2.2025		
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x client	x project folder		also:	
research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of laboratory testing:			Tomi Sahlman		

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

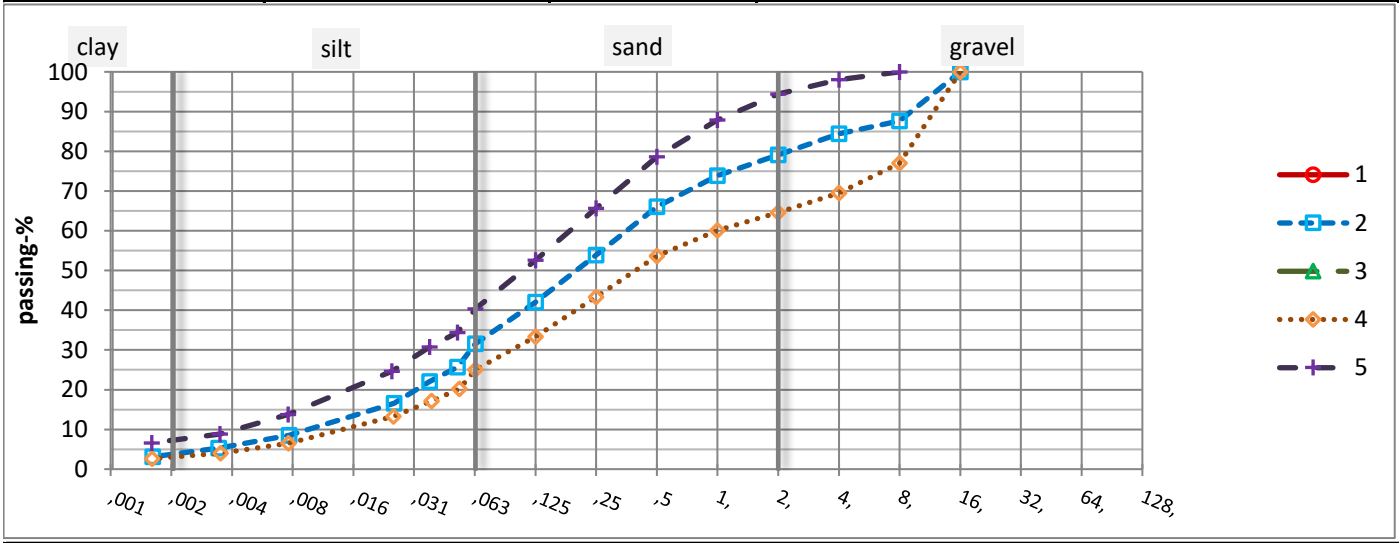
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H53	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H53	H53	H53	H53	H53
	depth [m]	1	2	3	4	5
	Sampler/ quality class*					
	date	17.1.2025	17.1.2025	17.1.2025	17.1.2025	17.1.2025
	researcher	DL	DL	DL	DL	DL
*Laboratory determined						
soil type	visual assesment	huSr		HkMr		
	CEN-ISO	orGr	grsiSa		grsasiS	siSa
	Geotechnical		HkMr		srHkMr	siHkMr
	sulfide soil					
	notes					
particle size determination			hydrometer & wet sieving		hydrometer & wet sieving	hydrometer & wet sieving
clay content [%]			3,8		3,1	7,3
w [%]| w_F [%]**		127,7	9,2	10,9	10,9	8,8
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***		16,8	1,1			
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH	MH	MH
	start date	25.2.2025	25.2.2025	25.2.2025	25.2.2025	25.2.2025
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x	client	x	project folder	also:
research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala			
Head of laboratory testing:				Tomi Sahlman	

Tutkimustoiminnan analyysistandardit:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

Sample observations and anomalies:	
Piste H53, syvyys 1 m	/Sample mostly peat and gravel. Granulanity test too unreliable.

Optional images from samples:

1.

2.

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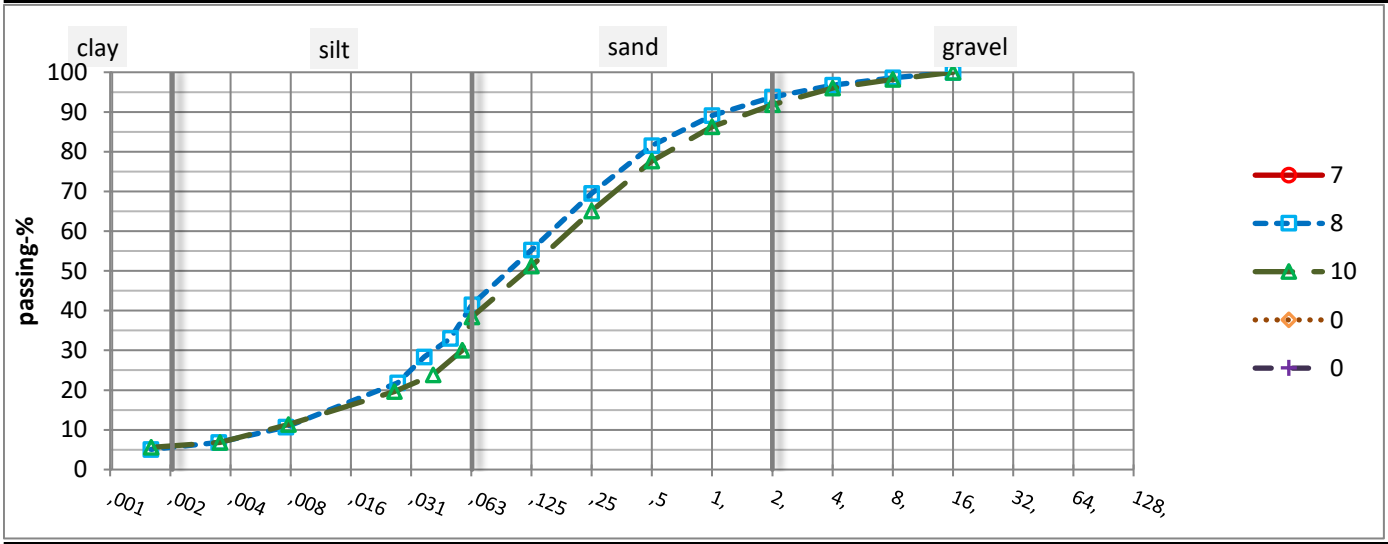
4.

5.

1	
2	
3	
4	
5	

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	H53	Client	Client
Area/ Division		Target	URSA Hauki		



sampling	point	H53	H53	H53		
	depth [m]	7	8	10		
	Sampler/ quality class*					
	date	17.1.2025	17.1.2025	17.1.2025		
	researcher	DL	DL	DL		
*Laboratory determined						
soil type	visual assesment	HkMr				
	CEN-ISO		saclSi	siSa		
	Geotechnical		siHkMr	siHkMr		
	sulfide soil notes					
particle size determination			hydrometer & wet sieving	hydrometer & wet sieving		
clay content [%]			5,6	6,0		
w [%] | w_F [%]**			11,1	9,4		
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	MH	MH	MH		
	start date	25.2.2025	25.2.2025	25.2.2025		
	end date					
**if separate w-% // ***if there is no areometer test, loss of ignition is reported						
Additional information						

distrib:	x	client	x	project folder	also:
research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of laboratory testing:			Tomi Sahlman		

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

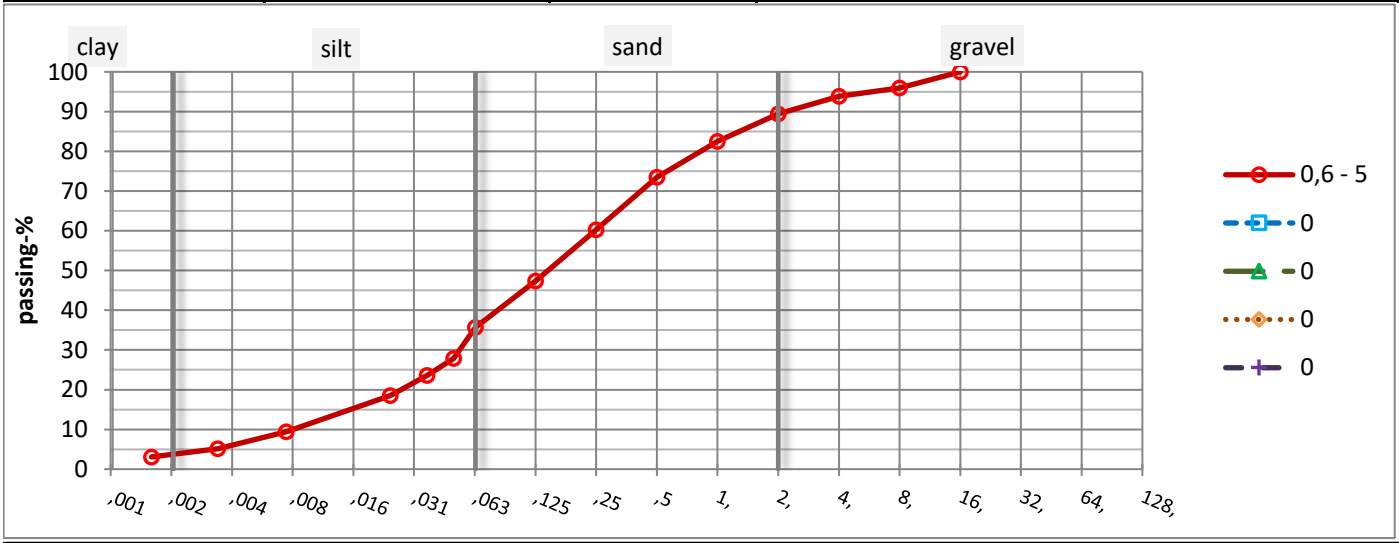
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	TP01	Client	Client
Area/ Division	Hauki	Target	URSA Hauki		



sampling	point	TP01					
	depth [m]	0,6 - 5					
	Sampler/ quality class*						
	date	20.11.2024					
	researcher	OS					
*Laboratory determined							
soil type	visual assesment						
	CEN-ISO	siSa					
	Geotechnical	siHkMr					
	sulfide soil						
	notes						
particle size determination		hydrometer & wet sieving					
clay content [%]		3,8					
w [%] | w_F [%]**		14,6					
density kN/m^3	moist						
	dry						
shear strength, fall cone kN/m^2	Undrained./ Su						
	Drained/ Sd						
	sensitivity						
fineness number F							
Attenberg limits	plastic limit, W_p						
	liquid limit, W_L						
	plasticity index I_P						
organic content [%]***							
frost susceptibility, grain size							
laboratory investigations	researcher	RÄ					
	start date	11.12.2024					
	end date						

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: [x] client [x] project folder [ ] also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

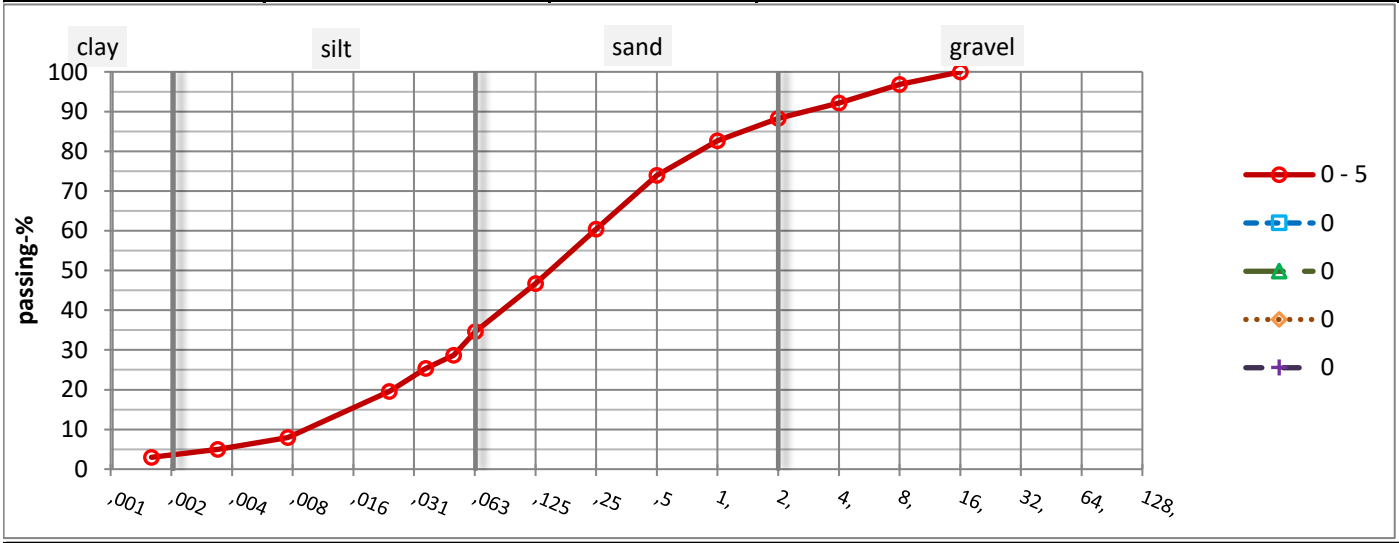
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	TP02	Client		Client
Area/ Division	Hauki	Target	URSA Hauki			



sampling	point	TP02					
	depth [m]	0 - 5					
	Sampler/ quality class*						
	date	21.11.2024					
	researcher	OS					
*Laboratory determined							
soil type	visual assesment						
	CEN-ISO	siSa					
	Geotechnical	siHkMr					
	sulfide soil						
	notes						
particle size determination		hydrometer & wet sieving					
clay content [%]		3,6					
w [%] | w_F [%]**		6,6					
density kN/m^3	moist						
	dry						
shear strength, fall cone kN/m^2	Undrained./ Su						
	Drained/ Sd						
	sensitivity						
fineness number F							
Attenberg limits	plastic limit, W_p						
	liquid limit, W_L						
	plasticity index I_P						
organic content [%]***							
frost susceptibility, grain size							
laboratory investigations	researcher	RÄ					
	start date	11.12.2024					
	end date						
**if separate w-% // ***if there is no areometer test, loss of ignition is reported							
Additional information							

distrib:	x	client	x	project folder		also:	

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

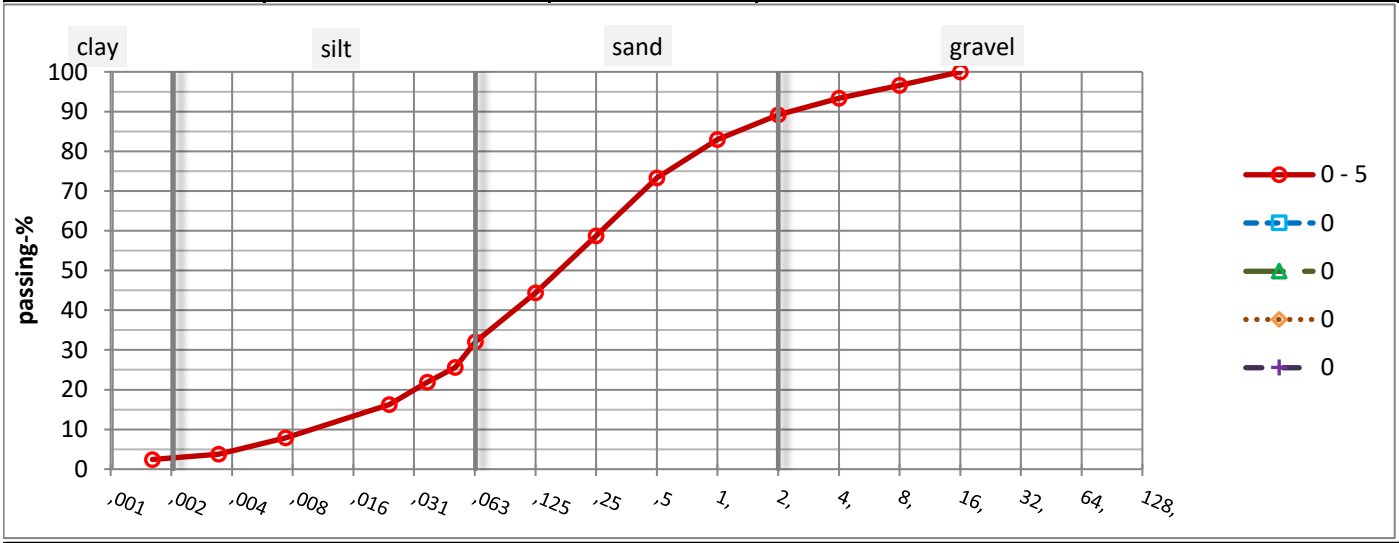
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	TP03	Client		Client
Area/ Division		Target	URSA Hauki			



sampling	point	TP03					
	depth [m]	0 - 5					
	Sampler/ quality class*						
	date	19.11.2024					
	researcher	OS					
*Laboratory determined							
soil type	visual assesment						
	CEN-ISO	siSa					
	Geotechnical	HkMr					
	sulfide soil						
	notes						
particle size determination		hydrometer & wet sieving					
clay content [%]		2,8					
w [%] | w_F [%]**		6,6					
density kN/m^3	moist						
	dry						
shear strength, fall cone kN/m^2	Undrained./ Su						
	Drained/ Sd						
	sensitivity						
fineness number F							
Attenberg limits	plastic limit, W_p						
	liquid limit, W_L						
	plasticity index I_P						
organic content [%]***							
frost susceptibility, grain size							
laboratory investigations	researcher	RÄ					
	start date	11.12.2024					
	end date						

**if separate w-% // ***if there is no areometer test, loss of ignition is reported							
Additional information							

distrib:	x	client	x	project folder		also:	

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

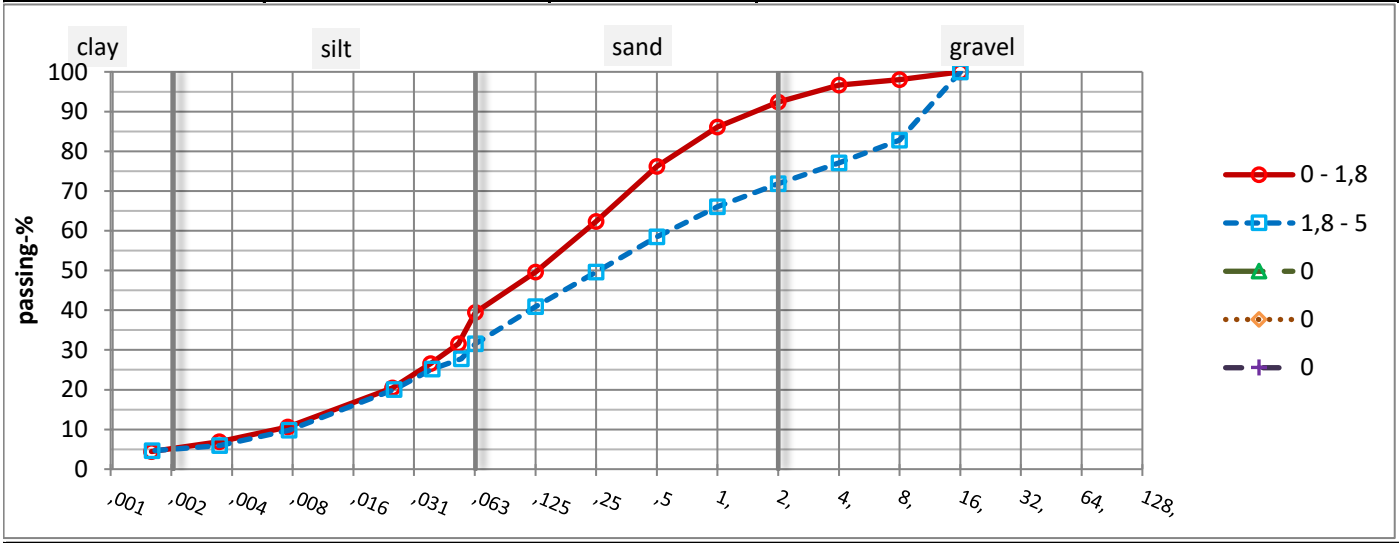
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	TP04	Client	Client
Area/ Division	Hauki	Target	URSA Hauki		



sampling	point	TP04	TP04			
	depth [m]	0 - 1,8	1,8 - 5			
	Sampler/ quality class*					
	date	19.11.2024	19.11.2024			
	researcher	OS	OS			
*Laboratory determined						
soil type	visual assesment					
	CEN-ISO	siSa	grsiSa			
	Geotechnical	siHkMr	HkMr			
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving			
clay content [%]		5,2	5,0			
w [%] | w_F [%]**		15,4	13,4			
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	RÄ	RÄ			
	start date	11.12.2024	11.12.2024			
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

Sample observations and anomalies:	
Point TP04, depth 0-1,8m	/Heavy organic content of test sample, increases uncertainty of areometer test

Optional images from samples:

1.

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4	
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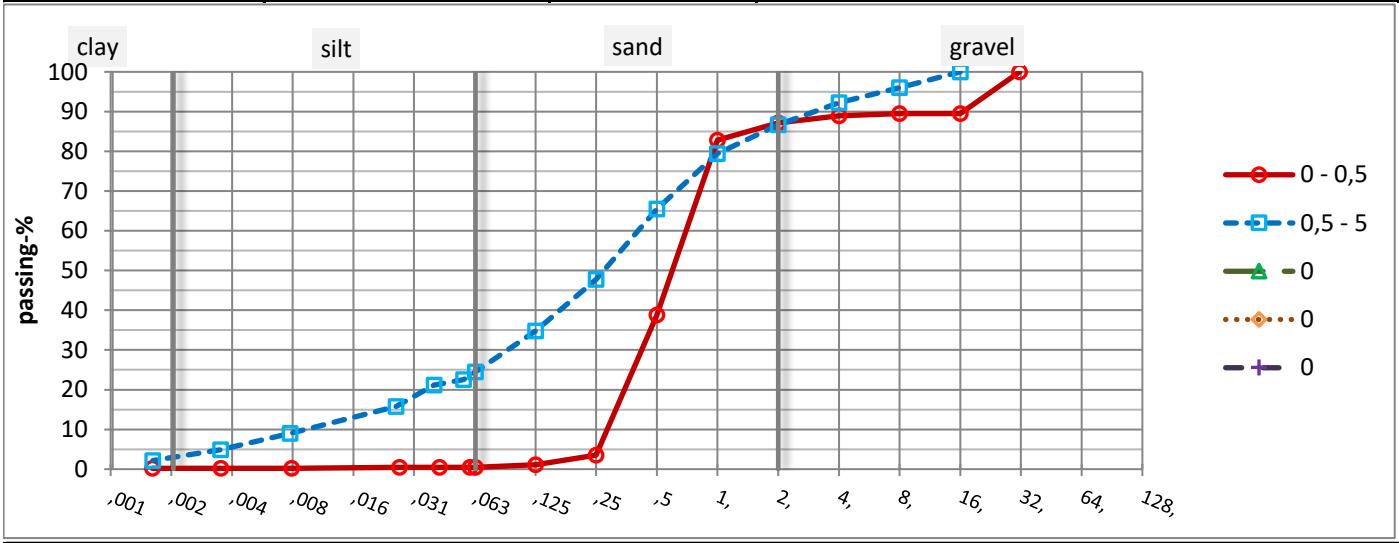
research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	TP05	Client	Client
Area/ Division	Hauki	Target	URSA Hauki		



sampling	point	TP05	TP05			
	depth [m]	0 - 0,5	0,5 - 5			
	Sampler/ quality class*					
	date	19.11.2024	19.11.2024			
	researcher	OS	OS			
*Laboratory determined						
soil type	visual assesment					
	CEN-ISO	Sa	siSa			
	Geotechnical	Hk	HkMr			
	sulfide soil					
	notes					
particle size determination		hydrometer & wet sieving	hydrometer & wet sieving			
clay content [%]		0,2	3,0			
w [%] | w_F [%]**		4,7	4,0			
density kN/m^3	moist					
	dry					
shear strength, fall cone kN/m^2	Undrained./ Su					
	Drained/ Sd					
	sensitivity					
fineness number F						
Attenberg limits	plastic limit, W_p					
	liquid limit, W_L					
	plasticity index I_P					
organic content [%]***						
frost susceptibility, grain size						
laboratory investigations	researcher	RÄ	RÄ			
	start date	11.12.2024	11.12.2024			
	end date					

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

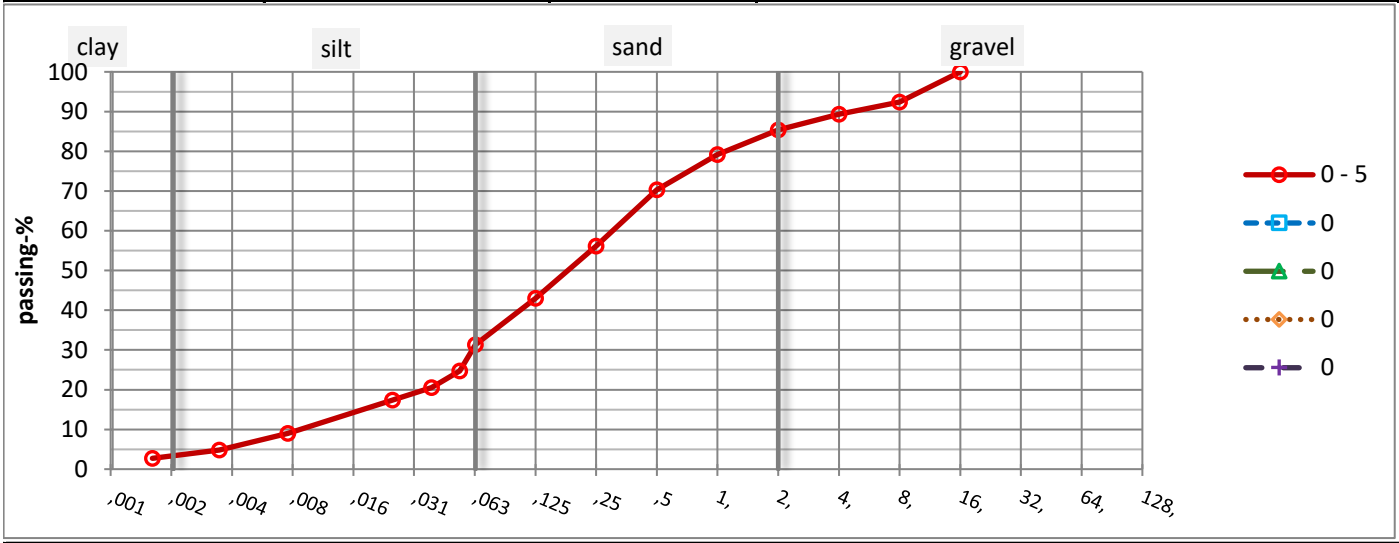
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	TP06	Client		Client
Area/ Division	Hauki	Target	URSA Hauki			



sampling	point	TP06					
	depth [m]	0 - 5					
	Sampler/ quality class*						
	date	20.11.2024					
	researcher	OS					
*Laboratory determined							
soil type	visual assesment						
	CEN-ISO	siSa					
	Geotechnical	HkMr					
	sulfide soil						
	notes						
particle size determination		hydrometer & wet sieving					
clay content [%]		3,4					
w [%] | w_F [%]**		6,2					
density kN/m^3	moist						
	dry						
shear strength, fall cone kN/m^2	Undrained./ Su						
	Drained/ Sd						
	sensitivity						
fineness number F							
Attenberg limits	plastic limit, W_p						
	liquid limit, W_L						
	plasticity index I_P						
organic content [%]***							
frost susceptibility, grain size							
laboratory investigations	researcher	RÄ					
	start date	11.12.2024					
	end date						

**if separate w-% // ***if there is no areometer test, loss of ignition is reported

Additional information

distrib: x client x project folder also:

research laboratory: Taratest Oy, Turkkirata 9A, 33960 Pirkkala

Head of laboratory testing: Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

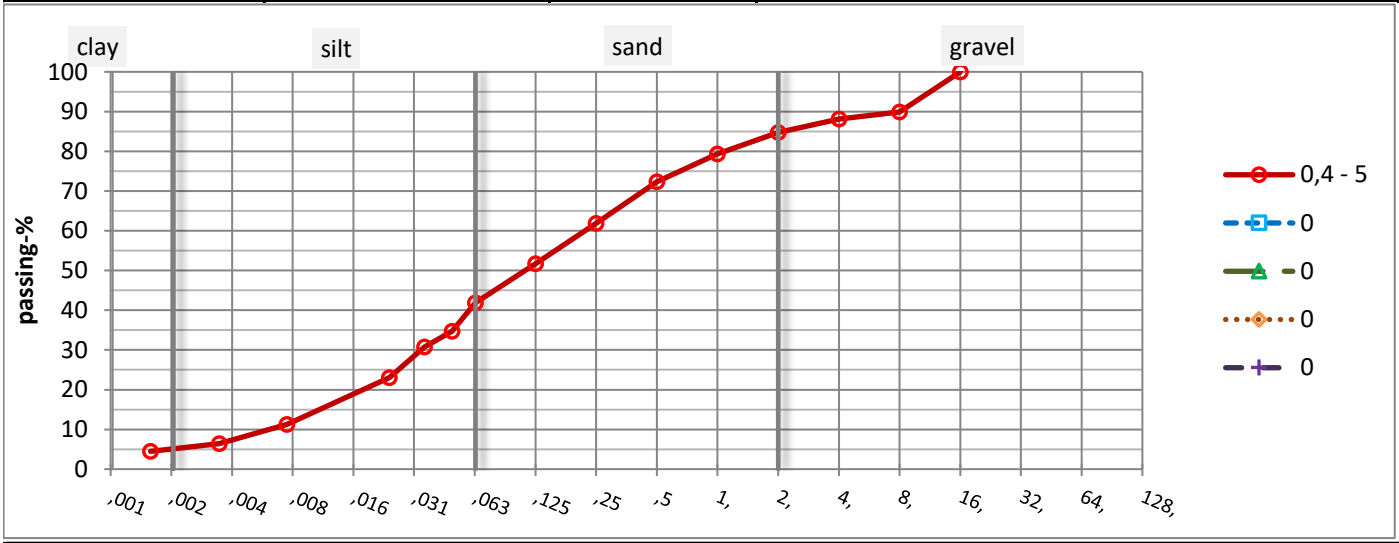
Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Project	21 738	Point number	TP07	Client	Client
Area/ Division	Hauki	Target	URSA Hauki		



sampling	point	TP07					
	depth [m]	0,4 - 5					
	Sampler/ quality class*						
	date	21.11.2024					
	researcher	OS					
*Laboratory determined							
soil type	visual assesment						
	CEN-ISO	saclSi					
	Geotechnical	siHkMr					
	sulfide soil						
	notes						
particle size determination		hydrometer & wet sieving					
clay content [%]		5,1					
w [%] | w_F [%]**		9,3					
density kN/m^3	moist						
	dry						
shear strength, fall cone kN/m^2	Undrained./ Su						
	Drained/ Sd						
	sensitivity						
fineness number F							
Attenberg limits	plastic limit, W_p						
	liquid limit, W_L						
	plasticity index I_P						
organic content [%]***							
frost susceptibility, grain size							
laboratory investigations	researcher	RÄ					
	start date	11.12.2024					
	end date						
**if separate w-% // ***if there is no areometer test, loss of ignition is reported							
Additional information							

distrib:	x	client	x	project folder		also:	

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

Standards:

Water content, SFS-EN ISO 17892-1:2015, GLO-85
Loss of ignition, GLO-85, SFS 3008, (2 h, 550 ^{o} C)
Su/Sd fall cone test, SFS-EN ISO 17892-6:2017, 2004/ 17892-12, Adaptation rules: Kartiokoe Suomessa
Fineness number with one point method SFS EN ISO 17892-12, Adaptation rules: Kartiokoe Suomessa
Attemberg limits, GLO-85, SFS-EN ISO 17892-12
Particle size distribution, screening- analysis, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016
Particle size distribution, hydrometer method, FS-EN ISO 17892-4:2016
Determination of density, quality class 1-2 samples, GLO-85, 17892-2:2015 linearic method
Oedometer test, CRS-method

Sample observations and anomalies:	

Optional images from samples:

1.	2.	3.
4.	5.	1 2 3 4 5

research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala	
Head of laboratory testing:		Tomi Sahlman

ANALYYSIRAPORTTI

Tilausnumero	: **HL2406729**	Tarjousnumero	: OF232163
Asiakas	: **Taratest Oy**	Projekti	: 21738
Yhteyshenkilö	: Jani Sjölund	Ostotilausnumero	: 21738
Osoite	: Turkkirata 9A 33960 Pirkkala Suomi	Näytteenottaja Näytteenottokohde	: ---- : ----
Sähköposti	: jani.sjolund@taratest.fi	Vastaanotetut näytteet	: 6
Puhelin	: ----	Analysoidut näytteet	: 6
		Vastaanottopvm	: 2024-12-17 16:40
		Analyysien aloituspvm	: 2024-12-18
Sivu	: 1 / 5	Päiväys	: 2025-01-07 14:34

Yleiset kommentit

Jos näytteenottoaikaa ei ole toimitettu, käytetään näytteenottoajan oletusarvoa 00:00 näytteenottopäivänä. Jos näytteenottopäivää ei ole toimitettu, käytetään oletusnäytteenottopäivää ja se näytetään sulkeissa ilman kellonaikaa.

Tilauksen kommentit

Näyte HL2406729/001, menetelmä S-CL-TIT - näytteiden määritysrajoja jouduttiin nostamaan alhaisen näytemäärän vuoksi.

Allekirjoitukset	*Asema*
Jari Hautala	Maajohtaja

Laboratorio	: ALS Finland Oy	Nettisivu	: www.alsglobal.fi
Osoite	: Ruosilankuja 3 A 00390 Helsinki Suomi	Sähköposti Puhelin	: asiakaspalvelu.hki@alsglobal.com : +358 10 470 1200

Analyysitulokset

Näytematriisi: **MAA**

	Asiakkaan näytetunnus	H47 1m
	Laboratorion näytetunnus	HL2406729-001
	Asiakkaan näytteenottopäivä/aika	2024-12-15 15:41

Parametri	Tulos	MU	Yksikkö	LOR	Menetelmä	Laboratorio
Fysikaaliset parametrit						
S-LI550-PREP/PR						
hehkutushäviö (550°C)	**5.78**	± 0.30	% k.a.	0.10	S-LI550GR	CS
kuiva-aine 105°C	**87.0**	± 4.35	%	0.10	S-DRY-GRCI	CS
Epäorgaaniset yhdisteet						
S-CL-TIT/PR						
kloridi	<200	----	mg/kg k.a.	40	S-CL-TIT	CS
Fysikaaliset parametrit						
S-CON-ELE02/PR						
sähkönjohtavuus	**2.8**	± 0.9	mS/m	1.0	S-CON-ELE02	CS
S-MOIST-GR/PR						
kosteus	**13.0**	± 0.65	%	0.10	S-DRY-GRCI	CS
S-PHH2O-ELE/PR						
pH (H2O)	**5.0**	± 0.2	-	1.0	S-PHH2O-ELE	CS
Liuenneet anionit						
S-SO4A-GR-PREP/PR						
sulfaatti (SO4:na)	**0.011** *	----	% k.a.	0.010	S-SO4A-GR	CS

Näytematriisi: **MAA**

	Asiakkaan näytetunnus	H47 1,5m
	Laboratorion näytetunnus	HL2406729-002
	Asiakkaan näytteenottopäivä/aika	2024-12-15 15:41

Parametri	Tulos	MU	Yksikkö	LOR	Menetelmä	Laboratorio
Fysikaaliset parametrit						
S-LI550-PREP/PR						
hehkutushäviö (550°C)	**1.21**	± 0.09	% k.a.	0.10	S-LI550GR	CS
kuiva-aine 105°C	**90.8**	± 4.54	%	0.10	S-DRY-GRCI	CS
Epäorgaaniset yhdisteet						
S-CL-TIT/PR						
kloridi	**429**	± 50	mg/kg k.a.	40	S-CL-TIT	CS
Fysikaaliset parametrit						
S-CON-ELE02/PR						
sähkönjohtavuus	**3.1**	± 0.9	mS/m	1.0	S-CON-ELE02	CS
S-MOIST-GR/PR						
kosteus	**9.18**	± 0.46	%	0.10	S-DRY-GRCI	CS
S-PHH2O-ELE/PR						
pH (H2O)	**5.5**	± 0.2	-	1.0	S-PHH2O-ELE	CS
Liuenneet anionit						
S-SO4A-GR-PREP/PR						
sulfaatti (SO4:na)	**0.095** *	----	% k.a.	0.010	S-SO4A-GR	CS

Näytematriisi: **MAA**

	H47 2m
Asiakkaan näytetunnus	
Laboratorion näytetunnus	*HL2406729-003*
Asiakkaan näytteenottopäivä/aika	*2024-12-15 15:41*

Parametri	**Tulos**	MU	*Yksikkö*	*LOR*	*Menetelmä*	*Laboratorio*
Fysikaaliset parametrit						
S-LI550-PREP/PR						
hehkutushäviö (550°C)	**0.66**	± 0.07	% k.a.	0.10	S-LI550GR	CS
kuiva-aine 105°C	**90.9**	± 4.54	%	0.10	S-DRY-GRCI	CS
Epäorgaaniset yhdisteet						
S-CL-TIT/PR						
kloridi	**116**	± 29	mg/kg k.a.	40	S-CL-TIT	CS
Fysikaaliset parametrit						
S-CON-ELE02/PR						
sähkönjohtavuus	**3.7**	± 1.0	mS/m	1.0	S-CON-ELE02	CS
S-MOIST-GR/PR						
kosteus	**9.12**	± 0.46	%	0.10	S-DRY-GRCI	CS
S-PHH2O-ELE/PR						
pH (H2O)	**5.7**	± 0.2	-	1.0	S-PHH2O-ELE	CS
Liuenneet anionit						
S-SO4A-GR-PREP/PR						
sulfaatti (SO4:na)	**0.020** *	----	% k.a.	0.010	S-SO4A-GR	CS

Näytematriisi: **MAA**

	H47 2,5m
Asiakkaan näytetunnus	
Laboratorion näytetunnus	*HL2406729-004*
Asiakkaan näytteenottopäivä/aika	*2024-12-15 15:41*

Parametri	**Tulos**	MU	*Yksikkö*	*LOR*	*Menetelmä*	*Laboratorio*
Fysikaaliset parametrit						
S-LI550-PREP/PR						
hehkutushäviö (550°C)	**0.61**	± 0.07	% k.a.	0.10	S-LI550GR	CS
kuiva-aine 105°C	**92.7**	± 4.63	%	0.10	S-DRY-GRCI	CS
Epäorgaaniset yhdisteet						
S-CL-TIT/PR						
kloridi	<40	----	mg/kg k.a.	40	S-CL-TIT	CS
Fysikaaliset parametrit						
S-CON-ELE02/PR						
sähkönjohtavuus	**4.0**	± 1.0	mS/m	1.0	S-CON-ELE02	CS
S-MOIST-GR/PR						
kosteus	**7.31**	± 0.36	%	0.10	S-DRY-GRCI	CS
S-PHH2O-ELE/PR						
pH (H2O)	**6.2**	± 0.2	-	1.0	S-PHH2O-ELE	CS
Liuenneet anionit						
S-SO4A-GR-PREP/PR						
sulfaatti (SO4:na)	**0.016** *	----	% k.a.	0.010	S-SO4A-GR	CS

Näytematriisi: **MAA**

	H47 3m
Asiakkaan näytetunnus	
Laboratorion näytetunnus	*HL2406729-005*
Asiakkaan näytteenottopäivä/aika	*2024-12-15 15:41*

Parametri	**Tulos**	MU	*Yksikkö*	*LOR*	*Menetelmä*	*Laboratorio*
Fysikaaliset parametrit						
S-LI550-PREP/PR						
hehkutushäviö (550°C)	**1.84**	± 0.11	% k.a.	0.10	S-LI550GR	CS
kuiva-aine 105°C	**90.7**	± 4.53	%	0.10	S-DRY-GRCI	CS
Epäorgaaniset yhdisteet						
S-CL-TIT/PR						
kloridi	**5280**	± 529	mg/kg k.a.	40	S-CL-TIT	CS
Fysikaaliset parametrit						
S-CON-ELE02/PR						
sähkönjohtavuus	**7.6**	± 1.7	mS/m	1.0	S-CON-ELE02	CS
S-MOIST-GR/PR						
kosteus	**9.31**	± 0.46	%	0.10	S-DRY-GRCI	CS
S-PHH2O-ELE/PR						
pH (H2O)	**5.7**	± 0.2	-	1.0	S-PHH2O-ELE	CS
Liuenneet anionit						
S-SO4A-GR-PREP/PR						
sulfaatti (SO4:na)	**0.813** *	----	% k.a.	0.010	S-SO4A-GR	CS

Näytematriisi: **MAA**

	H473,5m
Asiakkaan näytetunnus	
Laboratorion näytetunnus	*HL2406729-006*
Asiakkaan näytteenottopäivä/aika	*2024-12-15 15:41*

Parametri	**Tulos**	MU	*Yksikkö*	*LOR*	*Menetelmä*	*Laboratorio*
Fysikaaliset parametrit						
S-LI550-PREP/PR						
hehkutushäviö (550°C)	**0.85**	± 0.08	% k.a.	0.10	S-LI550GR	CS
kuiva-aine 105°C	**92.8**	± 4.64	%	0.10	S-DRY-GRCI	CS
Epäorgaaniset yhdisteet						
S-CL-TIT/PR						
kloridi	<40	----	mg/kg k.a.	40	S-CL-TIT	CS
Fysikaaliset parametrit						
S-CON-ELE02/PR						
sähkönjohtavuus	**3.4**	± 1.0	mS/m	1.0	S-CON-ELE02	CS
S-MOIST-GR/PR						
kosteus	**7.22**	± 0.36	%	0.10	S-DRY-GRCI	CS
S-PHH2O-ELE/PR						
pH (H2O)	**6.0**	± 0.2	-	1.0	S-PHH2O-ELE	CS
Liuenneet anionit						
S-SO4A-GR-PREP/PR						
sulfaatti (SO4:na)	**0.017** *	----	% k.a.	0.010	S-SO4A-GR	CS

Analyysiraportin tulososa päättyy tähän

Lyhyt menetelmäkuvaus

Analyysimenetelmät	Menetelmäkuvaukset
S-CL-TIT	CZ_SOP_D06_07_023.B (CSN EN 480-10) Kloridin määrittäminen potentiometrisella titrauksella ja natriumkloridin (NaCl) määrittäminen laskennallisesti mitatuista arvoista. Vain veteen liuenneet kloridit määritetään.
S-CON-ELE02	CZ_SOP_D06_07_126 (CSN EN 13038, CSN ISO 11265, CSN P CEN/TS 15937): Sähkönjohtavuuden määritys.
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Kuiva-aineen määrittäminen gravimetrisesti ja kosteuden määrittäminen laskennallisesti mitatuista arvoista.
S-LI550GR	CZ_SOP_D06_07_047.A (CSN EN 15935, CSN EN 13039, CSN 72 0103, CSN 46 5735) Tuhkan määritys gravimetrisesti ja hehkutushäviön määritys laskennallisesti mitatuista arvoista.
S-PHH2O-ELE	CZ_SOP_D06_07_113 (CSN EN ISO 10390, CSN EN 12176:1999, CSN EN 13037, CSN 46 5735, ÖNORM L 1086-1, US EPA Method 9045D; US EPA Method 9040C) pH:n määritys elektrokemiallisesti kiinteän näytteen suspensiosta. Käytetyt suspensioaineet: vesi, KCl, CaCl2, BaCl2. pH määritetään suhteellisessa lämpötilassa 25°C.
*S-SO4A-GR	CSN EN 1744-1 Tests for chemical properties of aggregates - Part 1: Chemical analysis - Chapter 12: Happoon liukenevan sulfaatin määrittäminen.

Esikäsittelymenetelmät	Menetelmäkuvaukset
S-PPHOM.07	CZ_SOP_D06_07_P01 Kiinteiden näytteiden esikäsittely analyyseja varten (murskaus, jauhaminen ja pulverisointi).
S-PPHOM0.3	CZ_SOP_D06_07_P01 Kiinteiden näytteiden esikäsittely analyyseja varten (murskaus, jauhaminen ja pulverisointi).
S-PPHOM2	Näytteen kuivaus ja seulonta raekokoon <2 mm
S-PPHOM4	CZ_SOP_D06_07_P01 Kiinteiden näytteiden esikäsittely analyyseja varten (murskaus, jauhaminen ja pulverisointi).

Lyhenteet: **LOR** = Raportointiraja (Limit Of Reporting) edustaa normaalia raportointirajaa kyseessä olevalle parametrille ja menetelmälle. Huomioithan, että raportointiraja voi nousta esim. liian pienen näytemäärän vuoksi tai jos näyte joudutaan laimentamaan matriisihäiriöiden vuoksi.

MU = Mittausepävarmuus

* = Merkki tuloksen yhteydessä tarkoittaa akkreditoimatonta analyysia.

Mittausepävarmuus:

Mittausepävarmuus on ilmoitettu laajennettuna mittausepävarmuutena (dokumentin "Guide to the Expression of Measurement", JCGM 100:2008 Corrected version 2010" määritelmän mukaan), jossa on käytetty kattavuuskerrointa 2, jolloin luotettavuustaso on noin 95%. Mittausepävarmuus raportoidaan vain havaituille yhdisteille, joiden pitoisuudet ovat yli raportointirajan.

Alihankkijoiden mittausepävarmuus on yleensä annettu laajennettuna mittausepävarmuutena, jossa on käytetty kattavuuskerrointa 2. Laboratoriolta saa lisätietoja pyydettäessä. Asbesti- ja haitta-ainelaboratorio AHA-LAB Oy:n osalta edellisestä poikkeavat tiedot mittausepävarmuudesta on esitetty kunkin analyysimenetelmän kuvauksessa.

Analysoiva laboratorio

	Laboratorio
CS	*Analysoinnista vastaa* ALS Czech Republic, s.r.o., Bendlova 1687/7 Ceska Lipa Tšekki 470 01 Akkreditointielin: CAI Akkreditointinumero: 1163, CSN EN ISO/IEC 17025:2018

ANALYYSIRAPORTTI

Tilausnumero	: **HL2501221**	Tarjousnumero	: OF232163
Asiakas	: **Taratest Oy**	Projekti	: 21738
Yhteyshenkilö	: Jani Sjölund	Ostotilausnumero	: 21738
Osoite	: Turkkirata 9A 33960 Pirkkala Suomi	Näytteenottaja Näytteenottokohde	: ---- : ----
Sähköposti	: jani.sjolund@taratest.fi	Vastaanotetut näytteet	: 3
Puhelin	: ----	Analysoidut näytteet	: 3
		Vastaanottopvm	: 2025-03-20 15:43
		Analyysien aloituspvm	: 2025-03-21
Sivu	: 1 / 4	Päiväys	: 2025-04-03 14:55

Yleiset kommentit

Jos näytteenottoaikaa ei ole toimitettu, käytetään näytteenottoajan oletusarvoa 00:00 näytteenottopäivänä. Jos näytteenottopäivää ei ole toimitettu, käytetään oletusnäytteenottopäivää ja se näytetään sulkeissa ilman kellonaikaa.

Tämä raportti edustaa alkuperäistä analyysiraporttia. Raporttia ei saa muokata ja sen saa kopioida vain kokonaisuudessaan. Muusta kopioinnista on saatava erillinen kirjallinen lupa laboratoriolta. Analyysitulokset pätevät ainoastaan analysoiduille näytteille. Lisätietoa laboratorion vastuuvelvollisuuksista löytyy kotisivuiltamme http://www.alsglobal.fi

Allekirjoitukset	*Asema*
Jari Hautala	Maajohtaja

Laboratorio	: ALS Finland Oy	Nettisivu	: www.alsglobal.fi
Osoite	: Ruosilankuja 3 A 00390 Helsinki Suomi	Sähköposti Puhelin	: asiakaspalvelu.hki@alsglobal.com : +358 10 470 1200

Analyysitulokset

Näytematriisi: **MAA**

	Asiakkaan näytetunnus	H12 1m
	Laboratorion näytetunnus	HL2501221-001
	Asiakkaan näytteenottopäivä/aika	2025-01-30 15:34

Parametri	Tulos	MU	Yksikkö	LOR	Menetelmä	Laboratorio
Fysikaaliset parametrit						
S-LI550-PREP/PR						
hehkutushäviö (550°C)	**0.68**	± 0.07	% k.a.	0.10	S-LI550GR	CS
kuiva-aine 105°C	**99.8**	± 4.99	%	0.10	S-DRY-GRCI	CS
Epäorgaaniset yhdisteet						
S-CL-TIT/PR						
kloridi	<40	----	mg/kg k.a.	40	S-CL-TIT	CS
Fysikaaliset parametrit						
S-CON-ELE02/PR						
sähkönjohtavuus	**17.4**	± 3.5	mS/m	1.0	S-CON-ELE02	CS
S-MOIST-GR/PR						
kosteus	**0.19**	± 0.02	%	0.10	S-DRY-GRCI	CS
S-PHH2O-ELE/PR						
pH (H2O)	**7.4**	± 0.3	-	1.0	S-PHH2O-ELE	CS
Liuenneet anionit						
S-SO4A-GR-PREP/PR						
sulfaatti (SO4:na)	**0.011** *	----	% k.a.	0.010	S-SO4A-GR	CS

Näytematriisi: **MAA**

	Asiakkaan näytetunnus	H12 1,5m
	Laboratorion näytetunnus	HL2501221-002
	Asiakkaan näytteenottopäivä/aika	2025-01-30 15:34

Parametri	Tulos	MU	Yksikkö	LOR	Menetelmä	Laboratorio
Fysikaaliset parametrit						
S-LI550-PREP/PR						
hehkutushäviö (550°C)	**0.47**	± 0.07	% k.a.	0.10	S-LI550GR	CS
kuiva-aine 105°C	**99.8**	± 4.99	%	0.10	S-DRY-GRCI	CS
Epäorgaaniset yhdisteet						
S-CL-TIT/PR						
kloridi	<40	----	mg/kg k.a.	40	S-CL-TIT	CS
Fysikaaliset parametrit						
S-CON-ELE02/PR						
sähkönjohtavuus	**4.2**	± 1.1	mS/m	1.0	S-CON-ELE02	CS
S-MOIST-GR/PR						
kosteus	**0.17**	± 0.02	%	0.10	S-DRY-GRCI	CS
S-PHH2O-ELE/PR						
pH (H2O)	**6.3**	± 0.3	-	1.0	S-PHH2O-ELE	CS
Liuenneet anionit						
S-SO4A-GR-PREP/PR						
sulfaatti (SO4:na)	**0.014** *	----	% k.a.	0.010	S-SO4A-GR	CS

Näytematriisi: **MAA**

Asiakkaan näytetunnus	**H12 2m**	
Laboratorion näytetunnus	*HL2501221-003*	
Asiakkaan näytteenottopäivä/aika	*2025-01-30 15:34*	

Parametri	**Tulos**	MU	*Yksikkö*	*LOR*	*Menetelmä*	*Laboratorio*
Fysikaaliset parametrit						
S-LI550-PREP/PR						
hehkutushäviö (550°C)	**0.43**	± 0.07	% k.a.	0.10	S-LI550GR	CS
kuiva-aine 105°C	**99.0**	± 4.95	%	0.10	S-DRY-GRCI	CS
Epäorgaaniset yhdisteet						
S-CL-TIT/PR						
kloridi	<40	----	mg/kg k.a.	40	S-CL-TIT	CS
Fysikaaliset parametrit						
S-CON-ELE02/PR						
sähkönjohtavuus	**4.2**	± 1.1	mS/m	1.0	S-CON-ELE02	CS
S-MOIST-GR/PR						
kosteus	**0.97**	± 0.05	%	0.10	S-DRY-GRCI	CS
S-PHH2O-ELE/PR						
pH (H2O)	**6.3**	± 0.3	-	1.0	S-PHH2O-ELE	CS
Liuenneet anionit						
S-SO4A-GR-PREP/PR						
sulfaatti (SO4:na)	**0.064 ***	----	% k.a.	0.010	S-SO4A-GR	CS

Analyysiraportin tulososa päättyy tähän

Lyhyt menetelmäkuvaus

Analyysimenetelmät	*Menetelmäkuvaukset*
S-CL-TIT	CZ_SOP_D06_07_023.B (CSN EN 480-10) Kloridin määrittäminen potentiometrisella titrauksella ja natriumkloridin (NaCl) määrittäminen laskennallisesti mitatuista arvoista. Vain veteen liuenneet kloridit määritetään.
S-CON-ELE02	CZ_SOP_D06_07_126 (CSN EN 13038, CSN ISO 11265, CSN P CEN/TS 15937): Sähkönjohtavuuden määritys.
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Kuiva-aineen määrittäminen gravimetrisesti ja kosteuden määrittäminen laskennallisesti mitatuista arvoista.
S-LI550GR	CZ_SOP_D06_07_047.A (CSN EN 15935, CSN EN 13039, CSN 72 0103, CSN 46 5735) Tuhkan määritys gravimetrisesti ja hehkutushäviön määritys laskennallisesti mitatuista arvoista.
S-PHH2O-ELE	CZ_SOP_D06_07_113 (CSN EN ISO 10390, CSN EN 12176:1999, CSN EN 13037, CSN 46 5735, ÖNORM L 1086-1, US EPA Method 9045D; US EPA Method 9040C) pH:n määritys elektrokemiallisesti kiinteän näytteen suspensiosta. Käytetyt suspensioaineet: vesi, KCl, CaCl2, BaCl2. pH määritetään suhteellisessa lämpötilassa 25°C.
*S-SO4A-GR	CSN EN 1744-1 Tests for chemical properties of aggregates - Part 1: Chemical analysis - Chapter 12: Happoon liukenevan sulfaatin määrittäminen.

Esikäsittelymenetelmät	*Menetelmäkuvaukset*
S-PPHOM.07	CZ_SOP_D06_07_P01 Kiinteiden näytteiden esikäsittely analyyseja varten (murskaus, jauhaminen ja pulverisointi).
S-PPHOM0.3	CZ_SOP_D06_07_P01 Kiinteiden näytteiden esikäsittely analyyseja varten (murskaus, jauhaminen ja pulverisointi).
S-PPHOM2	Näytteen kuivaus ja seulonta raekokoon <2 mm
S-PPHOM4	CZ_SOP_D06_07_P01 Kiinteiden näytteiden esikäsittely analyyseja varten (murskaus, jauhaminen ja pulverisointi).

Lyhenteet: **LOR** = Raportointiraja (Limit Of Reporting) edustaa normaalia raportointirajaa kyseessä olevalle parametrille ja menetelmälle. Huomioithan, että raportointiraja voi nousta esim. liian pienen näytemäärän vuoksi tai jos näyte joudutaan laimentamaan matriisihäiriöiden vuoksi.

MU = Mittausepävarmuus

***** = Merkki tuloksen yhteydessä tarkoittaa akkreditoimatonta analyysia.

Mittausepävarmuus:

Mittausepävarmuus on ilmoitettu laajennettuna mittausepävarmuutena (dokumentin "Guide to the Expression of Measurement", JCGM 100:2008 Corrected version 2010" määritelmän mukaan), jossa on käytetty kattavuuskerrointa 2, jolloin luotettavuustaso on noin 95%. Mittausepävarmuus raportoidaan vain havaituille yhdisteille, joiden pitoisuudet ovat yli raportointirajan.

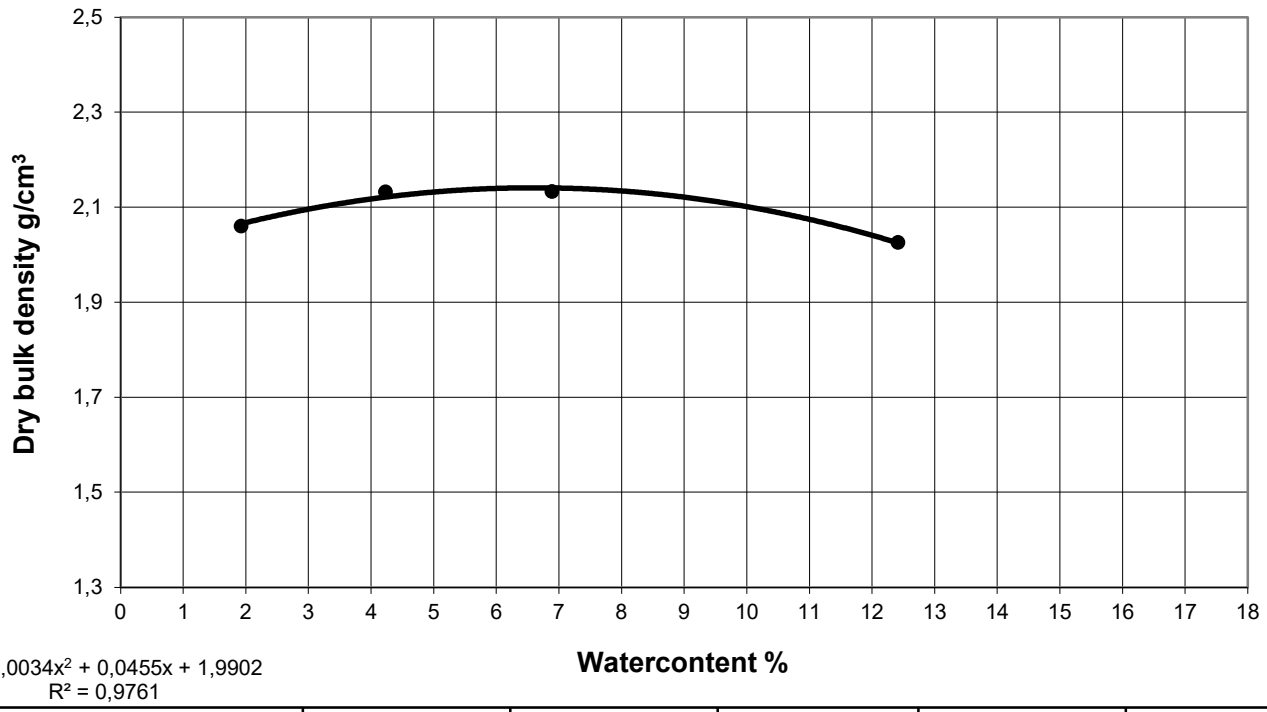
Alihankkijoiden mittausepävarmuus on yleensä annettu laajennettuna mittausepävarmuutena, jossa on käytetty kattavuuskerrointa 2. Laboratoriolta saa lisätietoja pyydettäessä. Asbesti- ja haitta-ainelaboratorio AHA-LAB Oy:n osalta edellisestä poikkeavat tiedot mittausepävarmuudesta on esitetty kunkin analyysimenetelmän kuvauksessa.

Analysoiva laboratorio

	Laboratorio
CS	*Analysoinnista vastaa* ALS Czech Republic, s.r.o., Bendlova 1687/7 Ceska Lipa Tšekki 470 01 Akkreditointielin: CAI Akkreditointinumero: 1163, CSN EN ISO/IEC 17025:2018

TESTREPORT
PROCTOR -koe SFS-EN 13286-2

Project #	21 738	Point #	TP01 0,6-5m		
Target	URSA - Hauki	Researche	RÄ	Ready	8.1.2025



$y = -0{,}0034x^2 + 0{,}0455x + 1{,}9902$
$R^2 = 0{,}9761$

Sample number	TP01/1	TP01/2	TP01/3	TP01/4	
Point					
Material					
Cell volume (cm3)	939	939	939	939	
Cell mass (g)	4111	4111	4111	4111	
Wet sample+ Cell (g)	6251	6253	6199	6084	
Wet smple (g)	2140	2142	2088	1973	
Container mass (g)	503	518	502	544	
wet sample + container (g)	2659	2660	2590	2517	
Dry sample + container (g)	2421	2522	2506	2479	
Wet sample (g)	2155	2142	2088	1973	
Dry sample (g)	1917	2004	2003	1936	
Mass of water (g)	238	138	85	37	
Watercontent (%)	12,4	6,9	4,2	1,9	
Wet sample (g)	2140	2142	2088	1973	
Dry sample (g)	1903	2004	2003	1936	
Wet bulk density [g/cm3]	2,278	2,280	2,222	2,100	
Wet specific weight [kN/m3]	22,3	22,4	21,8	20,6	
Dry bulk density [g/cm3]	2,026	2,133	2,132	2,060	
Dry specific density [kN/m3]	19,9	20,9	20,9	20,2	
Oversized particles [%]					
Proctor-density [kN/m3]					

Notes							
Notes							
Distrib	x	Cleint	x	Project folder		Addit	
Research Laboratory				Taratest Oy, Turkkirata 9A, 33960 Pirkkala			
Head of research laboratory						Maria Penttilä	

Standards used

Water content, SFS-EN ISO 17892-1:2015, SFS-EN 1097-5 GLO-85,
Granulanity, sieving, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016

Possible photos of samples

1.	2.	3.
4.	5.	

1	
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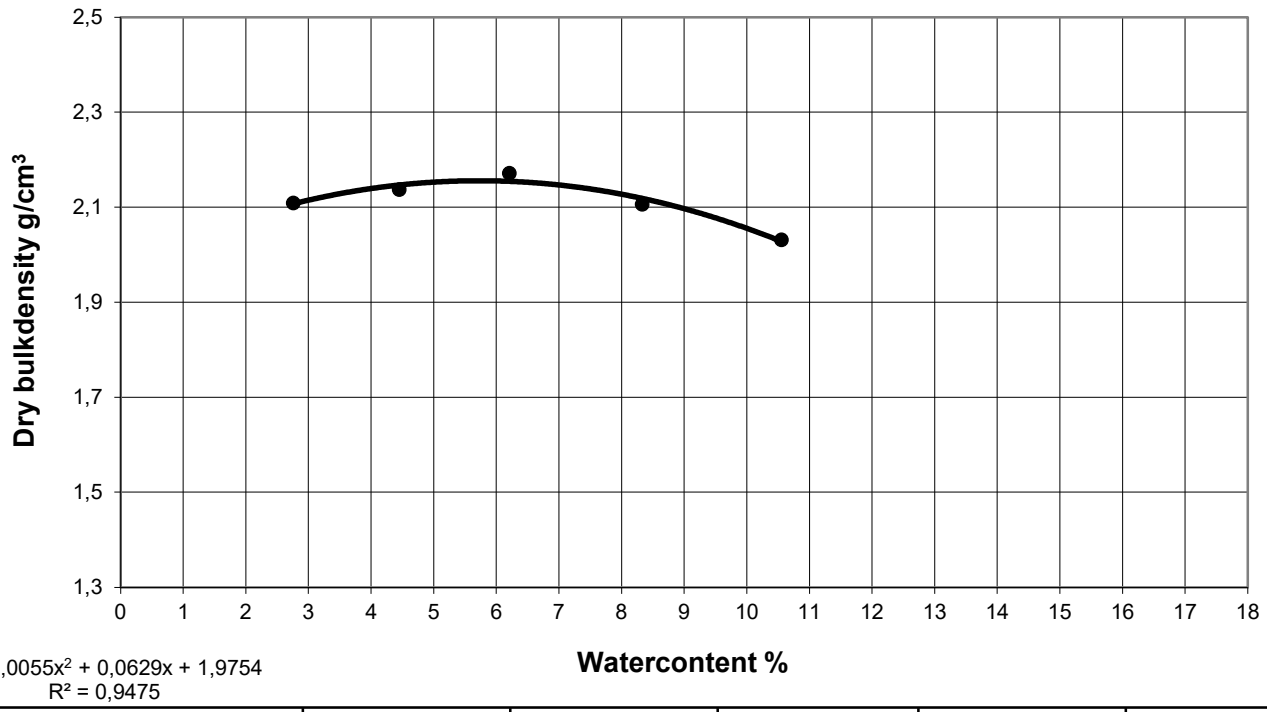
Distrib	x	Cleint	x	Project folder		Addit
Research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of research laboratory						Maria Penttilä

TESTREPORT
PROCTOR -koe SFS-EN 13286-2

Project #	21 738	Point #	TP2 0-5m	Client	
Target	URSA - Hauki		Researcher	RÄ	Ready 24.1.2025



$y = -0{,}0055x^2 + 0{,}0629x + 1{,}9754$
$R^2 = 0{,}9475$

Sample number	TP2/1	TP2/2	TP2/3	TP2/4	TP2/5
Point					
Material					
Cell volume (cm3)	939	939	939	939	939
Cell mass (g)	4111	4111	4111	4111	4111
Wet sample+ Cell (g)	6278	6221	6254	6208	6147
Wet smple (g)	2167	2110	2143	2097	2036
Container mass (g)	504	544	518	541	503
wet sample + container (g)	2670	2654	2661	2637	2539
Dry sample + container (g)	2544	2452	2496	2548	2484
Wet sample (g)	2167	2110	2143	2097	2036
Dry sample (g)	2040	1908	1978	2007	1981
Mass of water (g)	127	201	165	89	55
Watercontent (%)	6,2	10,6	8,3	4,4	3
Wet sample (g)	2167	2110	2143	2097	2036
Dry sample (g)	2040	1908	1978	2007	1981
Wet bulk density [g/cm3]	2,306	2,246	2,281	2,232	2
Wet specific weight [kN/m3]	22,6	22,0	22,4	21,9	21
Dry bulk density [g/cm3]	2,171	2,031	2,106	2,137	2
Dry specific density [kN/m3]	21,3	19,9	20,7	21,0	21
Oversized particles [%]					
Proctor-density [kN/m3]					

Notes	
Notes	
Distrib x Cleint x Project folder	Addit
Research laboratory	Taratest Oy, Turkkirata 9A, 33960 Pirkkala
Head of research laboratory	Maria Penttilä

Standards used

Watercontent, SFS-EN ISO 17892-1:2015, SFS-EN 1097-5 GLO-85,
Granulanity, Sieving, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016

Possible photos of samples

1.

2.

3.

4.

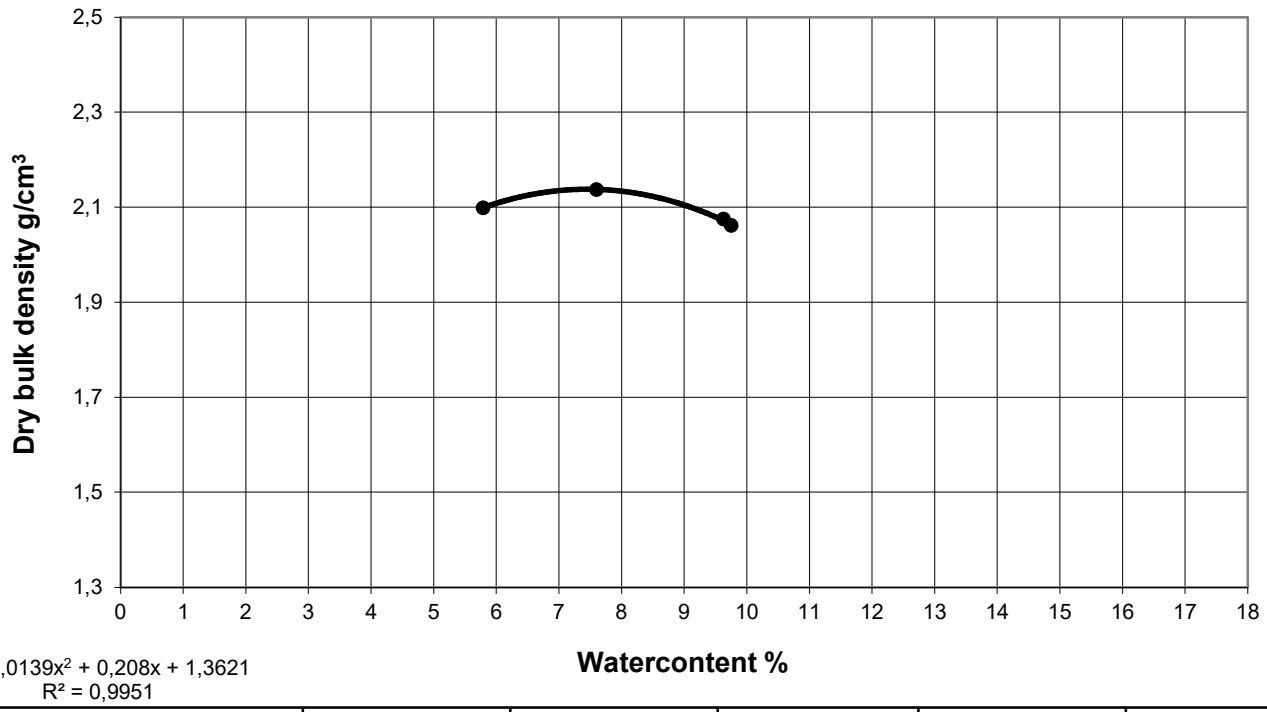
5.

1	TP02 0-5m 6,5%
2	TP02 0-5m 11%
3	TP02 0-5m 8,5%
4	TP02 0-5m 4%
5	TP02 0-5m 3%

Distrib	x	Client	x	Project folder		Addit
Research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of research laboratory						Maria Penttilä

TESTREPORT
PROCTOR -koe SFS-EN 13286-2

Project #	21 738	Point #	TP03 0-5m	Client	
Target	URSA - Hauki	Researcher	RÄ	Ready	21.1.2025



$y = -0{,}0139x^2 + 0{,}208x + 1{,}3621$
$R^2 = 0{,}9951$

Sample number	TP03/1	TP03/2	TP03/3	TP03/4	
Point					
Material					
Cell volume (cm3)	939	939	939	939	
Cell mass (g)	4111	4111	4111	4111	
Wet sample+ Cell (g)	6197	6272	6248	6237	
Wet smple (g)	2086	2160	2137	2126	
Container mass (g)	501	496	541	537	
wet sample + container (g)	2587	2656	2678	2668	
Dry sample + container (g)	2473	2503	2490	2479	
Wet sample (g)	2086	2160	2137	2130	
Dry sample (g)	1972	2008	1949	1941	
Mass of water (g)	114	153	188	189	
Watercontent (%)	5,8	7,6	9,6	9,8	
Wet sample (g)	2086	2160	2137	2126	
Dry sample (g)	1972	2008	1949	1937	
Wet bulk density [g/cm3]	2,220	2,300	2,275	2,263	
Wet specific weight [kN/m3]	21,8	22,6	22,3	22,2	
Dry bulk density [g/cm3]	2,099	2,137	2,075	2,062	
Dry specific density [kN/m3]	20,6	21,0	20,4	20,2	
Oversized particles [%]					
Proctor-density [kN/m3]					

Notes							
Notes							
Distrib	x	Client	x	Project folder		Addit	
Research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala					
Head of research laboratory						Maria Penttilä	

Standards used

Water content, SFS-EN ISO 17892-1:2015, SFS-EN 1097-5 GLO-85,
Granulanity, Sieving, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016

Possible photos

1.

2.

3.

4.

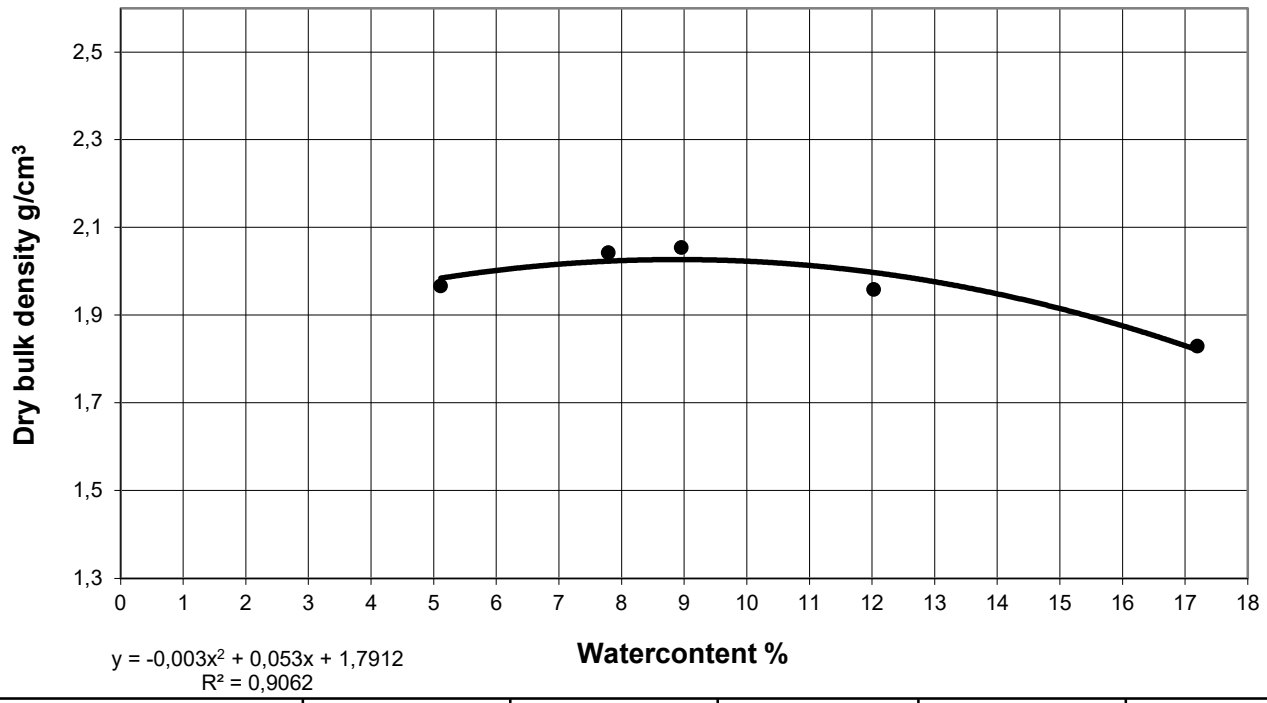
5.

1	TP03 0-5m 5,8%
2	TP03 0-5m 8%
3	TP03 0-5m 10%
4	
5	

Distrib	x	Client	x	Project folder		Addit
Research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of research laboratory						Maria Penttilä

TESTREPORT
PROCTOR -koe SFS-EN 13286-2

Project #	21 738	Point #	TP04 0-1,8m				
Target	URSA - Hauki		Tekijä	RÄ	Ready	21.1.2025	



Sample number	TP04 0-1,8	TP04 0-1,8	TP04 0-1,8	TP04 0-1,8	TP04 0-1,8
Point					
Material					
Cell volume (cm3)	939	939	939	939	939
Cell mass (g)	4111	4111	4111	4111	4111
Wet sample+ Cell (g)	6125	6173	6214	6180	6053
Wet smple (g)	2014	2061	2103	2068	1942
Container mass (g)	500	502	541	544	541
wet sample + container (g)	2514	2563	2643	2612	2482
Dry sample + container (g)	2219	2342	2471	2463	2388
Wet sample (g)	2014	2061	2103	2068	1942
Dry sample (g)	1719	1840	1930	1919	1847
Mass of water (g)	296	221	173	149	94
Watercontent (%)	17,2	12,0	9,0	7,8	5
Wet sample (g)	2014	2061	2103	2068	1942
Dry sample (g)	1719	1840	1930	1919	1847
Wet bulk density [g/cm3]	2,144	2,194	2,238	2,202	2
Wet specific weight [kN/m3]	21,0	21,5	22,0	21,6	20
Dry bulk density [g/cm3]	1,829	1,959	2,054	2,043	2
Dry specific density [kN/m3]	17,9	19,2	20,2	20,0	19
Oversized particles [%]					
Proctor-density [kN/m3]					

Notes							
Notes							
Distrib	x	Client	x	Project folder		Addit	
Research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala					
Head of research laboratory						Maria Penttilä	

Standards used

Water content, SFS-EN ISO 17892-1:2015, SFS-EN 1097-5 GLO-85,
Granulanity, Sieving, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016

Possible photos of samples

1.

2.

3.

4.

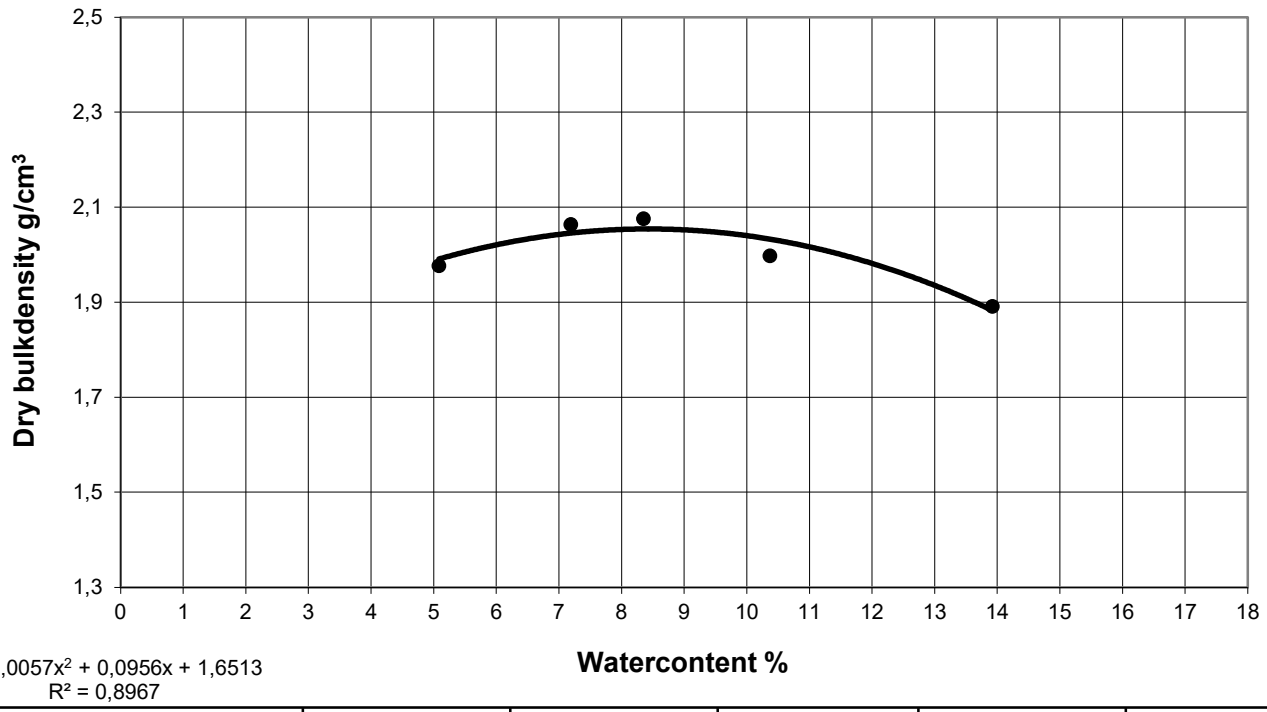
5.

1	TP04 0-1,8m 17,2%
2	TP04 0-1,8m 12%
3	TP04 0-1,8m 9%
4	TP04 0-1,8m 7,8%
5	

Distrib	x	Client	x	Project folder		Addit
Research laboratory				Taratest Oy, Turkkirata 9A, 33960 Pirkkala		
Head of research laboratory						Maria Penttilä

TESTRESULTS
PROCTOR -koe SFS-EN 13286-2

Project #	21 738	Point #	TP04 1,8-5m			
Target	URSA - Hauki		Researcher	RÄ	Ready	21.1.2025



$y = -0{,}0057x^2 + 0{,}0956x + 1{,}6513$
$R^2 = 0{,}8967$

Sample number	TP04 1,8-5m	TP04 1,8-5m	TP04 1,8-5m	TP04 1,8-5m	TP04 1,8-5m
Point					
Material					
Cell volume (cm3)	939	939	939	939	939
Cell mass (g)	4111	4111	4111	4111	4111
Wet sample+ Cell (g)	6135	6183	6224	6190	6063
Wet smple (g)	2024	2071	2113	2078	1952
Container mass (g)	500	502	541	544	541
wet sample + container (g)	2509	2563	2653	2622	2492
Dry sample + container (g)	2264	2370	2491	2483	2398
Wet sample (g)	2009	2062	2113	2078	1952
Dry sample (g)	1764	1868	1950	1939	1857
Mass of water (g)	246	194	163	139	94
Watercontent (%)	13,9	10,4	8,3	7,2	5
Wet sample (g)	2024	2071	2113	2078	1952
Dry sample (g)	1777	1877	1950	1939	1857
Wet bulk density [g/cm3]	2,155	2,205	2,249	2,212	2
Wet specific weight [kN/m3]	21,1	21,6	22,1	21,7	20
Dry bulk density [g/cm3]	1,891	1,998	2,076	2,064	2
Dry specific density [kN/m3]	18,6	19,6	20,4	20,2	19
Oversized particles [%]					
Proctor-density [kN/m3]					

Notes							
Notes							
Distrib	x	Client	x	Project Folder		Addit	
Research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala					
Head of research laboratory						Maria Penttilä	

Standards used

Watercontent, SFS-EN ISO 17892-1:2015, SFS-EN 1097-5 GLO-85,
Granulanity, Sieving, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016

Possible photos of samples

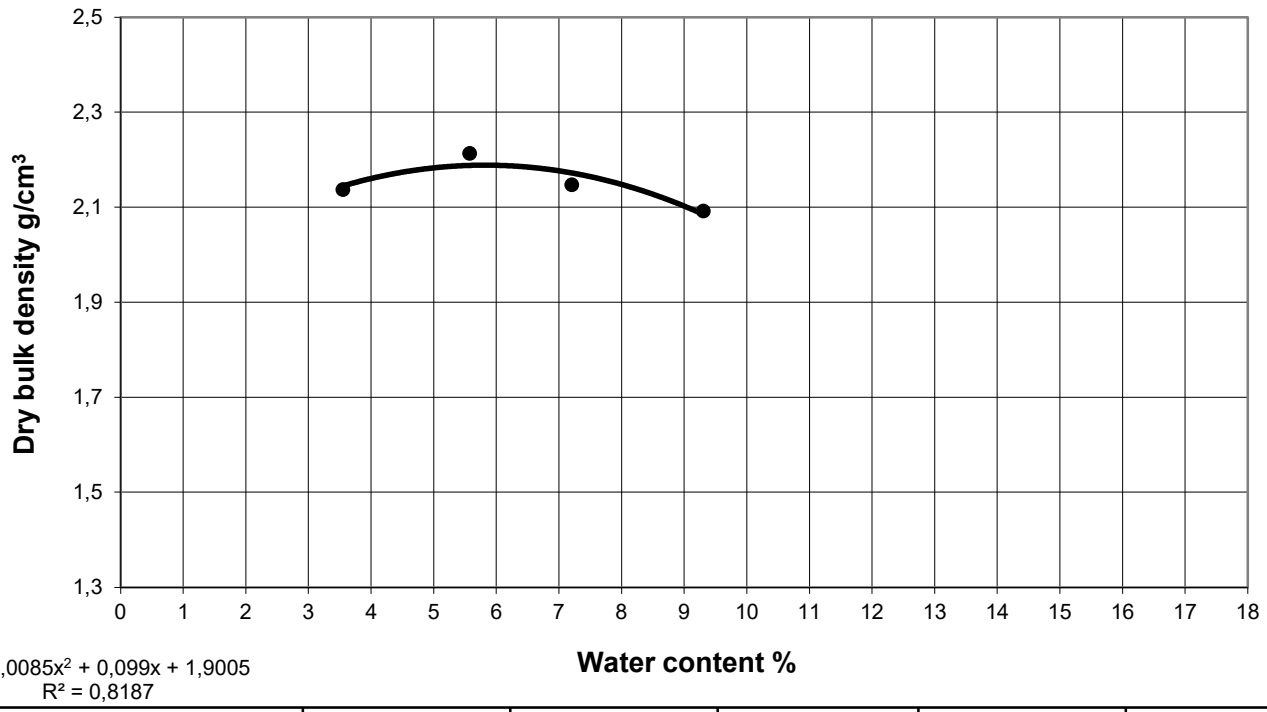
1.	2.	3.
4.	5.	

1	
2	
3	
4	
5	

Distrib	x	Client	x	project folder		Addit	
Research laboratory				Taratest Oy, Turkkirata 9A, 33960 Pirkkala			
Head of research laboratory						Maria Penttilä	

TESTRESULTS
PROCTOR -koe SFS-EN 13286-2

Project #	21 738	Point #	TP05 0,5-5m			
Target	URSA - Hauki		Researcher	RÄ	Ready	17.1.2025



Sample number	tp05 0,5-5	tp05 0,5-5	tp05 0,5-5	tp05 0,5-5	
Point					
Material					
Cell volume (cm3)	939	939	939	939	
Cell mass (g)	4111	4111	4111	4111	
Wet sample+ Cell (g)	6190	6306	6274	6259	
Wet smple (g)	2079	2195	2163	2148	
Container mass (g)	496	518	503	500	
wet sample + container (g)	2575	2713	2666	2648	
Dry sample + container (g)	2503	2597	2520	2465	
Wet sample (g)	2079	2195	2163	2148	
Dry sample (g)	2008	2079	2017	1965	
Mass of water (g)	71	116	145	183	
Watercontent (%)	3,6	5,6	7,2	9,3	
Wet sample (g)	2079	2195	2163	2148	
Dry sample (g)	2008	2079	2017	1965	
Wet bulk density [g/cm3]	2,213	2,337	2,302	2,287	
Wet specific weight [kN/m3]	21,7	22,9	22,6	22,4	
Dry bulk density [g/cm3]	2,137	2,213	2,147	2,092	
Dry specific density [kN/m3]	21,0	21,7	21,1	20,5	
Oversized particles [%]					
Proctor-density [kN/m3]					

Notes							
Notes							
Distrib	x	Client	x	project folder		Addit	
Research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala					
Head of research laboratory						Maria Penttilä	

Standards used

Water content, SFS-EN ISO 17892-1:2015, SFS-EN 1097-5 GLO-85,
Granulanity, Sieving, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016

Possible photos of samples

1.

2.

3.

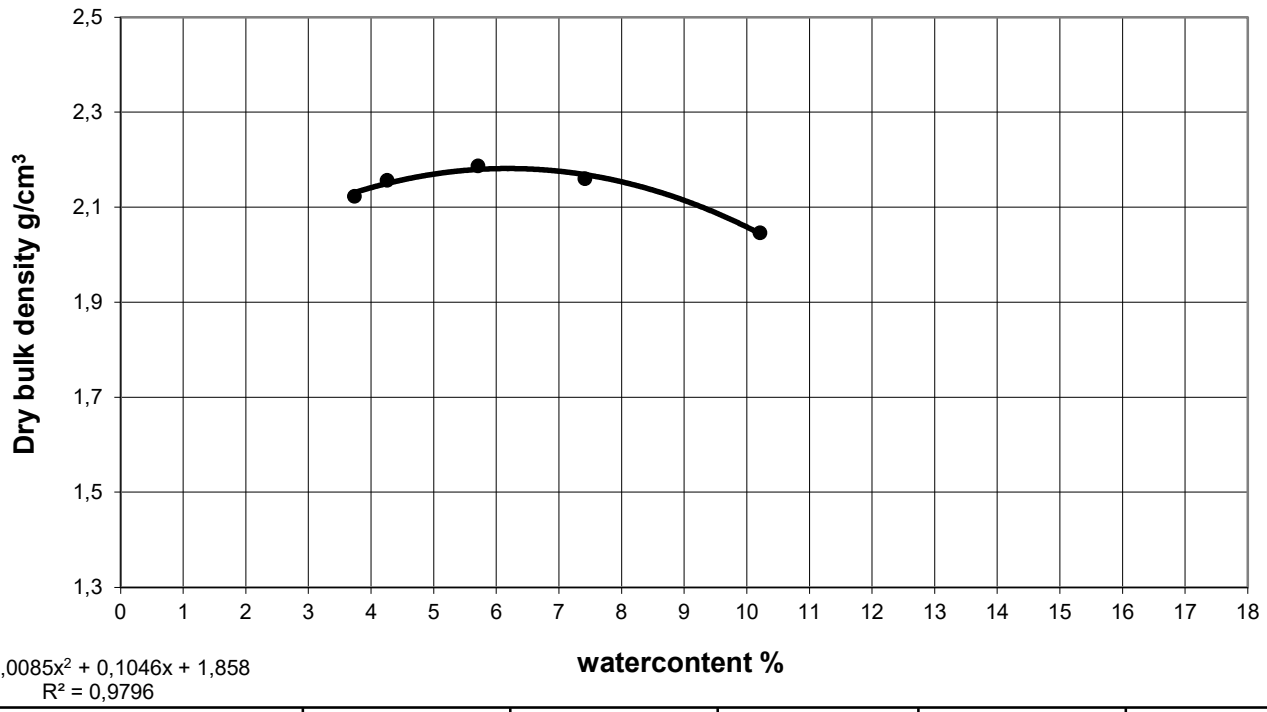
4.

5.

1	TP05 0,5-5m 3,6%
2	TP05 0,5-5m 8%
3	TP05 0,5-5m 10%
4	
5	

Distrib	x	Client	x	Project folder		Addit	
Research laboratory				Taratest Oy, Turkkirata 9A, 33960 Pirkkala			
Head of research laboratory						Maria Penttilä	

Project #	21 738	Point #	TP06 0-5m			
Target	URSA - Hauki		Researcher	RÄ	Ready	15.1.2025



$y = -0{,}0085x^2 + 0{,}1046x + 1{,}858$
$R^2 = 0{,}9796$

Sample number	TP06/1	TP06/2	TP06/3	TP06/4	TP06/5
Point					
Material					
Cell volume (cm3)	939	939	939	939	939
Cell mass (g)	4111	4111	4111	4111	4111
Wet sample+ Cell (g)	6283	6230	6291	6224	6180
Wet smple (g)	2172	2119	2180	2113	2069
Container mass (g)	505	501	496	544	544
wet sample + container (g)	2676	2620	2675	2656	2612
Dry sample + container (g)	2559	2424	2525	2570	2538
Wet sample (g)	2172	2119	2180	2113	2069
Dry sample (g)	2054	1922	2029	2026	1994
Mass of water (g)	117	196	151	86	74
Watercontent (%)	5,7	10,2	7,4	4,3	4
Wet sample (g)	2172	2119	2180	2113	2069
Dry sample (g)	2054	1922	2029	2026	1994
Wet bulk density [g/cm^3]	2,311	2,255	2,320	2,249	2
Wet specific weight [kN/m^3]	22,7	22,1	22,8	22,1	22
Dry bulk density [g/cm^3]	2,187	2,046	2,160	2,157	2
Dry specific density [kN/m^3]	21,5	20,1	21,2	21,2	21
Oversized particles [%]					
Proctor-density [kN/m^3]					

Notes							
Notes							
Distrib	x	Client	x	Project folder		Addit	
Research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala					
Head of research laboratory						Maria Penttilä	

Standards used

Water content, SFS-EN ISO 17892-1:2015, SFS-EN 1097-5 GLO-85,
Granulanity, Sieving, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016

Possible photos of samples

1.

2.

3.

4.

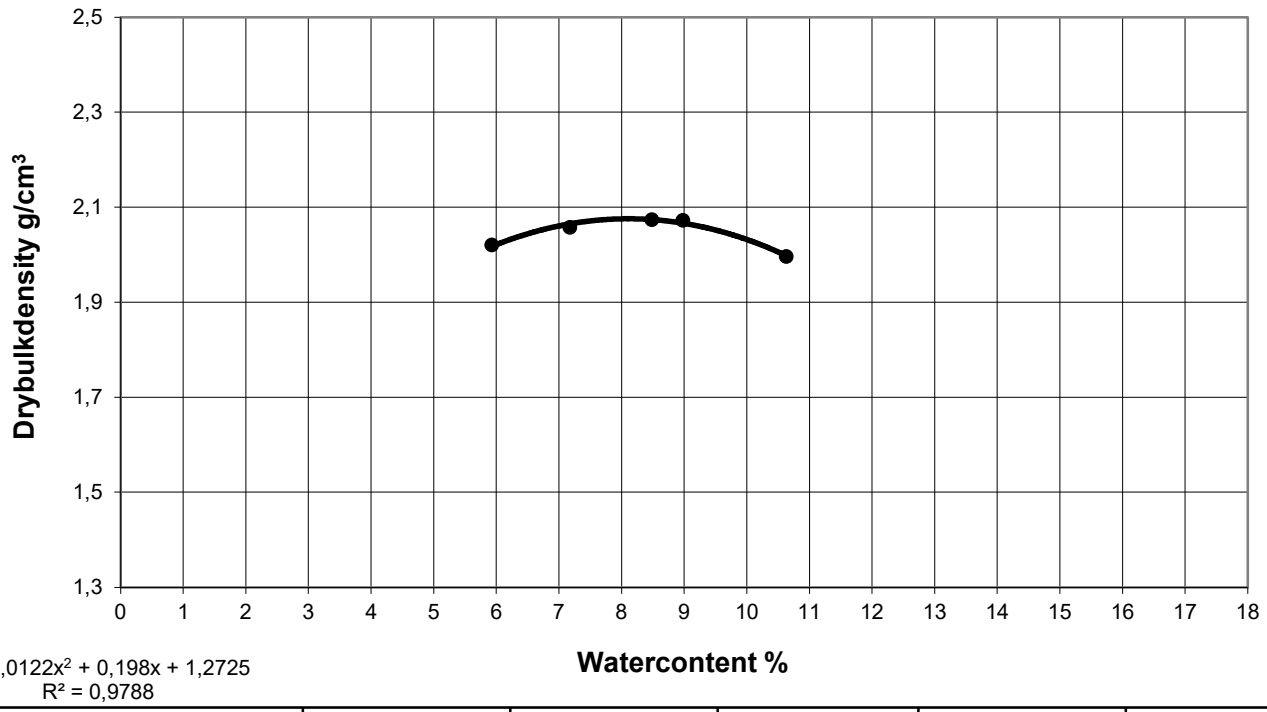
5.

1	TP06 0-5m 11%
2	TP06 0-5m 8%
3	TP06 0-5m 4%
4	TP06 0-5m 3%
5	

Distrib	x	Client	x	Project folder		Addit
Research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of research laboratory						Maria Penttilä

TESTREPORT
PROCTOR -koe SFS-EN 13286-2

Project #	21 738	Point #	TP07 0,4-5m				
Target	URSA - Hauki		Researcher	RÄ	Ready	14.1.2025	



$y = -0{,}0122x^2 + 0{,}198x + 1{,}2725$
$R^2 = 0{,}9788$

Sample number	TP07/1	TP07/2	TP07/3	TP07/4	TP07/5
Point					
Material					
Cell volume (cm3)	939	939	939	939	939
Cell mass (g)	4111	4111	4111	4111	4111
Wet sample+ Cell (g)	6233	6186	6225	6183	6122
Wet smple (g)	2122	2075	2114	2072	2011
Container mass (g)	500	501	495	543	503
wet sample + container (g)	2622	2576	2609	2615	2514
Dry sample + container (g)	2447	2377	2444	2476	2401
Wet sample (g)	2122	2075	2114	2072	2011
Dry sample (g)	1947	1875	1948	1933	1898
Mass of water (g)	175	199	165	139	113
Watercontent (%)	9,0	10,6	8,5	7,2	6
Wet sample (g)	2122	2075	2114	2072	2011
Dry sample (g)	1947	1875	1948	1933	1898
Wet bulk density [g/cm3]	2,258	2,208	2,250	2,205	2
Wet specific weight [kN/m3]	22,2	21,7	22,1	21,6	21
Dry bulk density [g/cm3]	2,072	1,996	2,074	2,058	2
Dry specific density [kN/m3]	20,3	19,6	20,3	20,2	20
Oversized particles [%]					
Proctor-density [kN/m3]					

Notes							
Notes							
Distrib	x	Client	x	project folder		Addit	
Research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala					
Head of research laboratory						Maria Penttilä	

Standards used

Water content, SFS-EN ISO 17892-1:2015, SFS-EN 1097-5 GLO-85,
Granulanity, Sieving, SFS-EN 933-1:2012 ja SFS-EN ISO 17892-4:2016

Mahdolliset valokuvat näytteistä:

1.

2.

3.

4.

5.

1	TP07 0,4-5m 9,3%
2	TP07 0,4-5m 11%
3	TP07 0,4-5m 8%
4	
5	

Distrib	x	Client	x	Project folder		Addit
Research laboratory		Taratest Oy, Turkkirata 9A, 33960 Pirkkala				
Head of research laboratory						Maria Penttilä

Sample	Maximum dry density (kN/m3)	Optimal water content (%)
TP01 0,6-5m	20,9	4,2-6,9
TP02 0-5m	21,3	6,2
TP03 0-5m	21	7,6
TP04 0-1,8m	20,2	9
TP04 1,8-5m	20,4	8,3
TP05 0,5-5m	21,7	5,6
TP06 0-5m	21,5	5,7
TP07 0,4-5m	20,3	8,5-9