

# JORC Code, 2012 Edition – Table 1

## GVR22028 Grängesberg Exploration Jan-Matts tailings dam updated MRE

### Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul style="list-style-type: none"> <li>• <i>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</i></li> <li>• <i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i></li> <li>• <i>Aspects of the determination of mineralisation that are Material to the Public Report.</i></li> <li>• <i>In cases where ‘industry standard’ work has been done this would be relatively simple (eg ‘reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay’). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Three campaigns of sampling were carried out to determine the variations in grade and one to determine the variation in bulk density as well as the variations in moisture contents with depth.</li> <li>• The first campaign was done by an M.Sc. student for his thesis (Berg, 2011). The samples were collected by pressing a rotating shovel (auger) down into the material and a sample was taken for every 1m interval from surface and downwards. The deepest located sample was taken from a depth of 4,75m. A total of 13 stations were sampled for a total of 44 samples. These samples were directly placed into Ziplock plastic bags, sealed, and transported to the laboratory at the University of Göteborg for sample preparation and mineralogical studies.</li> <li>• The second campaign was done by the technical consultant Thyréns, using a track mounted drillrig (Wikström, 2021). 24 stations were visited and resulted in a total of 125 samples. Sampling was done until it reached the substratum. The third campaign was done by the same consultant, using the same equipment and crew. The samples were handled the same way.</li> <li>• These samples were collected whole for each interval into sturdy watertight plastic bags, no splitting was carried out in the field. After insertion of a ticket with the sample identity, the bags were sealed with cable ties. Each bag was marked with hole number and sampling depth (from and to) with a permanent marker. As a safety measure, a field diary was filled in with the same information.</li> <li>• Mineralisation is related to the content of Phosphorus in the form of Apatite in tailings resulting from the iron ore mining in the Grängesberg mine.</li> <li>• Samples were collected in nominal 1-meter intervals, from which the full meter was collected.</li> <li>• The samples were sent to the Geological Survey of Finland’s, GTK</li> </ul>

Criteria	JORC Code explanation	Commentary
		<p>Mintec's, sample preparation facility in Outokumpu, Finland, where they were submitted for sample preparation.</p> <ul style="list-style-type: none"> <li>The samples taken in the third campaign, for testing the variability of bulk density and moisture contents were taken by Envix AB, using a Sonic drill rig. The samples were collected in a plastic tube that lined the drill tube. The tube was sealed with caps directly as the pipe was retrieved from the hole.</li> </ul>
<i>Drilling techniques</i>	<ul style="list-style-type: none"> <li><i>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</i></li> </ul>	<ul style="list-style-type: none"> <li>The first campaign samples were taken by use of an auger.</li> <li>The second and fourth campaign samples were taken with a track mounted drill rig, equipped with an open-ended window sampler with an inner diameter of 65 mm.</li> <li>Nominal sample length was 1 m, in practice this varied between 0,3 to 1,0 m, with the odd sample lengths appearing at the end of the holes, when the natural sub-surface was reached. The full sample was recovered and kept.</li> <li>The samples for determination of density and moisture were taken with a Sonic drillrig.</li> </ul>
<i>Drill sample recovery</i>	<ul style="list-style-type: none"> <li><i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></li> <li><i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></li> <li><i>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</i></li> </ul>	<ul style="list-style-type: none"> <li>The first campaign samples were directly placed into Ziplock plastic bags and sealed and transported to the laboratory of Göteborg University, for sample preparation and mineralogical studies.</li> <li>The second fourth campaign samples were collected in a bucket as the window sampler was emptied, and immediately transferred to sturdy plastic bags with a unique sample ticket and sealed watertight with cable ties.</li> <li>It is considered that the fine grain size, 0-5 mm, of the sampled material did not cause a problem with preferential recovery of one size fraction or the other.</li> </ul>
<i>Logging</i>	<ul style="list-style-type: none"> <li><i>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</i></li> <li><i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i></li> <li><i>The total length and percentage of the relevant intersections logged.</i></li> </ul>	<ul style="list-style-type: none"> <li>The sampled material is very homogenous. The logging done directly in the field included the recording of material and colour. It was noted when sampled material represented the sub-surface.</li> <li>All samples have been logged as described above.</li> </ul>
<i>Sub-sampling techniques</i>	<ul style="list-style-type: none"> <li><i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li> <li><i>If non-core, whether riffled, tube sampled, rotary split, etc and</i></li> </ul>	<ul style="list-style-type: none"> <li>The first campaign samples were directly placed into Ziplock plastic bags and sealed and transported to the laboratory of Göteborg</li> </ul>

Criteria	JORC Code explanation	Commentary
<i>and sample preparation</i>	<p><i>whether sampled wet or dry.</i></p> <ul style="list-style-type: none"> <li><i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></li> <li><i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i></li> <li><i>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</i></li> <li><i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i></li> </ul>	<p>University, for sample preparation and mineralogical studies.</p> <ul style="list-style-type: none"> <li>The second and fourth campaign samples were, upon reception by GTK, dried, weighed and split with a riffle splitter.</li> <li>No field duplicates were used to check quality of sample preparation, the laboratory did, however, insert blanks to check for cross-contamination.</li> </ul>
<i>Quality of assay data and laboratory tests</i>	<ul style="list-style-type: none"> <li><i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li> <li><i>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</i></li> <li><i>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</i></li> </ul>	<ul style="list-style-type: none"> <li>The first campaign samples were assayed by ALS Global, using the accredited methods ME-ICP06 (Al<sub>2</sub>O<sub>3</sub>, BaO, CaO, Cr<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub>, K<sub>2</sub>O, MgO, MnO, Na<sub>2</sub>O, P<sub>2</sub>O<sub>5</sub>, SiO<sub>2</sub>, SrO and TiO<sub>2</sub>) and ME-MS81 (Ag, Ba, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Ga, Gd, Hf, Ho, La, Lu, Mo, Nb, Nd, Ni, Pb, Pr, Rb, Sm, Sn, Sr, Ta, Tb, Th, Tl, Tm, U, V, W, Y, Yb, Zn and Zr).</li> <li>The second and fourth campaign samples were assayed by CRS Laboratories in Outokumpu using the method XRF-181X-O (SiO<sub>2</sub>, TiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Cr<sub>2</sub>O<sub>3</sub>, V<sub>2</sub>O<sub>5</sub>, FeO, MnO, MgO, CaO, Rb<sub>2</sub>O, SrO, BaO, Na<sub>2</sub>O, K<sub>2</sub>O, Zr<sub>2</sub>O, P<sub>2</sub>O<sub>5</sub>, Cu, Ni, Co, Zn, Pb, Ag, S, As, Sb, Bi, Te, Y, Nb, Mo, Sn, W, Cl, Th, U, Cs, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Hf, Ta and Br) and the colorimetric method AD-SP-P04 for P. In addition, they were assayed by Eurofins Labtium using the ICP-MS 304M (Ag, As, Bi, Cd, Ce, Co, Dy, Er, Eu, Ga, Gd, Ge, Hf, Ho, In, La, Lu, Mo, Nb, Nd, Pb, Pr, Re, Sb, Sc, De, Sm, Sn, Ta, Tb, Te, Th, Tl, Tm, U, W, Y and Yb) and ICP-OES 304P (Al, Ba, Be, Ca, Cr, Cu, Fe, K, Li, Mg, Mn, Na, Ni, P, Rb, S, Sr, Ti, V, Zn and Zr).</li> <li>All three listed laboratories use certified standards and blanks to control the quality of assays. The results show that acceptable levels of accuracy and precision is established.</li> </ul>
<i>Verification of sampling and assaying</i>	<ul style="list-style-type: none"> <li><i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li><i>The use of twinned holes.</i></li> <li><i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li><i>Discuss any adjustment to assay data.</i></li> </ul>	<ul style="list-style-type: none"> <li>No independent verification has been carried out. No twin holes have been made and assay variability between holes is so low that twin holes are not considered to be required.</li> <li>Data related to hole and sample number was recorded in the field on paper, these records were later transferred into a MS Access data base to be matched with the assays.</li> <li>No adjustments to primary assay data have been done.</li> </ul>

Criteria	JORC Code explanation	Commentary
Location of data points	<ul style="list-style-type: none"> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul style="list-style-type: none"> <li>All drill hole collars have been located using RTK-GPS, with an estimated accuracy of +/- 5-10 mm in easting and northing and +/- 10 mm in elevation.</li> <li>All surveys were done using the Swedish National grid, SWEREF99TM.</li> <li>All drillholes were vertical.</li> <li>Down hole surveys were not required as little deviation of the drill will have occurred at such short lengths.</li> </ul>
Data spacing and distribution	<ul style="list-style-type: none"> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul style="list-style-type: none"> <li>The hole spacing was nominally 100 m in a grid but varied slightly, see drill collar locations on the figure in Appendix 1.</li> <li>The distance between holes is considered sufficient to capture variations in grade as shown by variography studies.</li> <li>No compositing of captured samples has been made.</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	<ul style="list-style-type: none"> <li>The tailings are of anthropogenic deposition of material that has been deposited over time. The likely structural orientation is therefore in semi-horizontal layers reflecting the deposition.</li> <li>Sampling through vertical drill holes with 1m nominal sample length is thus considered appropriate.</li> </ul>
Sample security	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>The samples were stored in a locked warehouse on site until they were transported to the respective sample preparation laboratory.</li> </ul>
Audits or reviews	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>No audits have been done.</li> </ul>

## Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> <li>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> <li>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</li> </ul>	<ul style="list-style-type: none"> <li>Extraction waste is not covered as concession minerals by the Minerals Act in Sweden, they are considered to be property of the landowner. Grängesberg Exploration holds an agreement with the landowner that gives the company an exclusive right to extract the extraction waste currently stored in the Jan-Matts repository.</li> <li>There are no known impediments for the company to obtain the necessary permits to extract the tailings, nor to put the planned</li> </ul>

Criteria	JORC Code explanation	Commentary
		production facility in operation.
Exploration done by other parties	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>As far as known, no previous attempt to carry out a Mineral Resource estimate of the tailing's repository has been undertaken.</li> </ul>
Geology	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable.</li> </ul>
Drill hole Information	<ul style="list-style-type: none"> <li>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: <ul style="list-style-type: none"> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </li> <li>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	<ul style="list-style-type: none"> <li>The collar locations and lengths for the 53 drill holes are tabulated in Appendix 2.</li> <li>All drillholes were drilled vertical with a minimum length of 1 metres, maximum length of 15 metres and an average (mean) length of 9.5 metres.</li> <li>All drillholes encountered apatite enrichment from surface (in the first metres sampled).</li> <li>All holes in the second and fourth campaigns were drilled until they encountered the sub-stratum.</li> </ul>
Data aggregation methods	<ul style="list-style-type: none"> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul style="list-style-type: none"> <li>The distribution of P<sub>2</sub>O<sub>5</sub> in the collected samples appears to be nearly normal distributed, no top-cutting or other adjustments were therefore considered necessary, see Appendix 3.</li> <li>The composites were calculated to 1 m nominal length, using Surpac's "best fit" function. This resulted in that composites vary in length between 0,75 m and 1,08 m, and an average length of 0,94m.</li> <li>Only the economic value of the P<sub>2</sub>O<sub>5</sub> has been considered in the Mineral Resource, with no metal equivalent values considered.</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li> </ul>	<ul style="list-style-type: none"> <li>The intention of the drill programmes was to drill down to the sub-stratum of the repository. The modelling of the bottom for the wireframe solids was based on "the last good intercept", see Appendix 4.</li> <li>Due to the near horizontal orientation of the repository the vertical holes intercept the true width of mineralisation.</li> </ul>
Diagrams	<ul style="list-style-type: none"> <li>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of</li> </ul>	<ul style="list-style-type: none"> <li>See Appendix 4 and diagrams within the body of the main report.</li> </ul>

Criteria	JORC Code explanation	Commentary
	<i>drill hole collar locations and appropriate sectional views.</i>	
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>	<ul style="list-style-type: none"> <li>The spacing of samples, both laterally and vertically, is considered to allow for a good representativity of the grade distribution and the overall tonnage.</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</li> </ul>	<ul style="list-style-type: none"> <li>Grade results of the Mineral Resource estimate agree with historical production reports.</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	<ul style="list-style-type: none"> <li>Future work is to concentrate on metallurgical processing and to obtain the necessary approvals/permits.</li> </ul>

### Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
<i>Database integrity</i>	<ul style="list-style-type: none"> <li>Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.</li> <li>Data validation procedures used.</li> </ul>	<ul style="list-style-type: none"> <li>All data referring to collar location, sample preparation and chemical assaying has been entered directly from instruments or laboratory system, no transcriptions have been necessary. The depths of sampling (from and to) as well as hole identities were noted on field protocols that were manually transcribed. However, collar ID's have been checked against field notes.</li> </ul>
<i>Site visits</i>	<ul style="list-style-type: none"> <li>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</li> <li>If no site visits have been undertaken indicate why this is the case.</li> </ul>	<ul style="list-style-type: none"> <li>The site has been visited by the Competent Person, after sampling was carried out. The purpose was to visually inspect the sampled material.</li> </ul>
<i>Geological interpretation</i>	<ul style="list-style-type: none"> <li>Confidence in (or conversely, the uncertainty of ) the geological interpretation of the mineral deposit.</li> <li>Nature of the data used and of any assumptions made.</li> <li>The effect, if any, of alternative interpretations on Mineral Resource estimation.</li> <li>The use of geology in guiding and controlling Mineral Resource estimation.</li> </ul>	<ul style="list-style-type: none"> <li>The spacing of samples, both laterally and vertically, is considered to allow for a good representativity of the grade distribution for the overall tonnage.</li> <li>The volumes of the mineralised material have been determined by a combination of high-resolution terrain models, a sonar survey and the results from the drilling and assaying. The continuity of grade is shown</li> </ul>

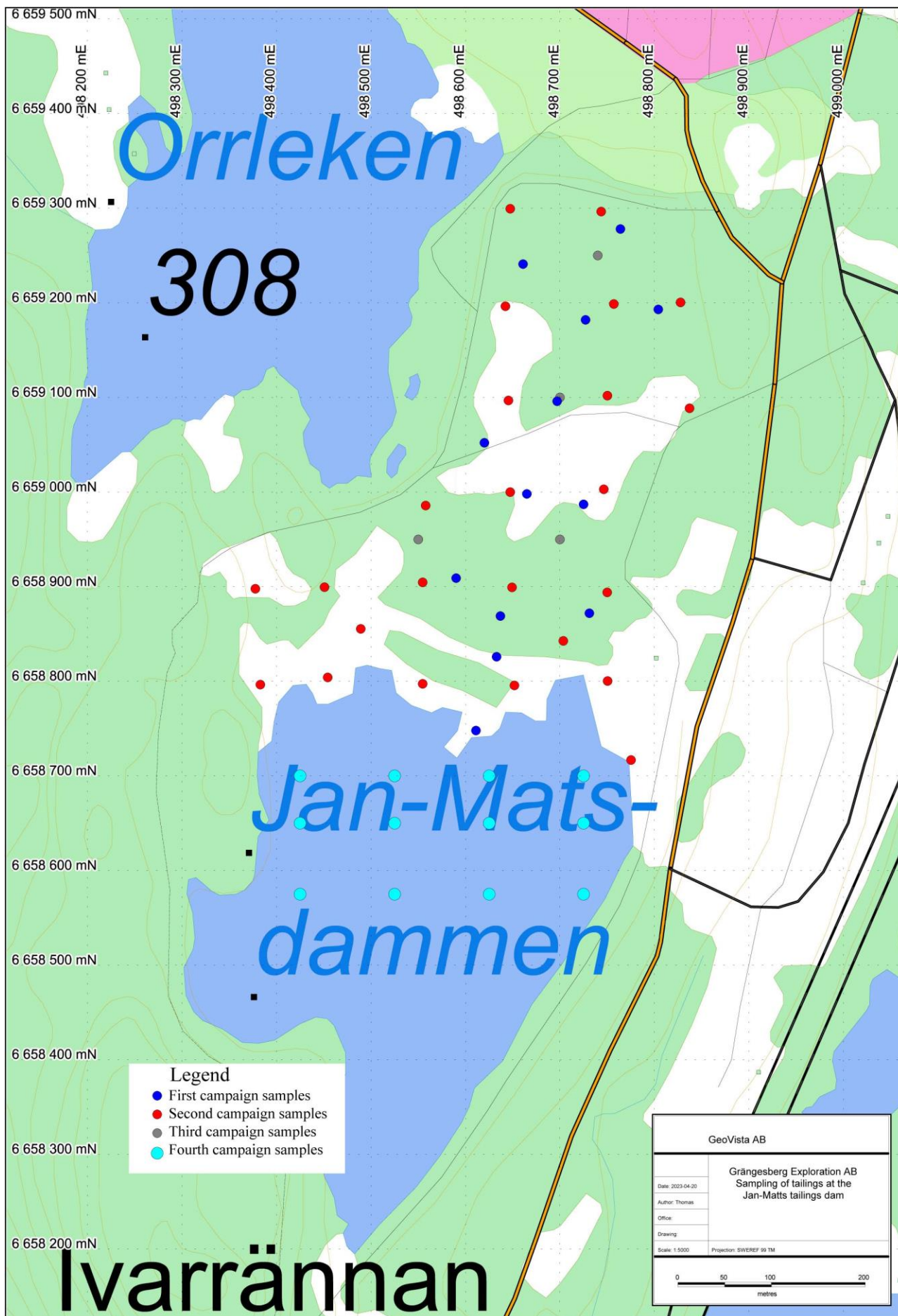
Criteria	JORC Code explanation	Commentary																							
	<ul style="list-style-type: none"> <li>The factors affecting continuity both of grade and geology.</li> </ul>	by variography to be very good.																							
Dimensions	<ul style="list-style-type: none"> <li>The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.</li> </ul>	<ul style="list-style-type: none"> <li>The repository is approximately 500 m long, varies in width from 200 to 400m and varying in height from 11 to 15 m.</li> </ul>																							
Estimation and modelling techniques	<ul style="list-style-type: none"> <li>The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.</li> <li>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</li> <li>The assumptions made regarding recovery of by-products.</li> <li>Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).</li> <li>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</li> <li>Any assumptions behind modelling of selective mining units.</li> <li>Any assumptions about correlation between variables.</li> <li>Description of how the geological interpretation was used to control the resource estimates.</li> <li>Discussion of basis for using or not using grade cutting or capping.</li> <li>The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.</li> </ul>	<ul style="list-style-type: none"> <li>The deposit has been modelled as one domain.</li> <li>The block model has been made of blocks with the following sizes, X=25m, Y= 25m and Z=2m, using a sub-blocking factor of ¼.</li> <li>The search parameters for interpolation by way of Ordinary Kriging are:</li> </ul> <table border="1"> <thead> <tr> <th></th> <th colspan="2">Search radii</th> <th colspan="2">No. of samples</th> <th rowspan="2">No. holes</th> </tr> <tr> <th>Pass</th> <th>Major</th> <th>Minor</th> <th>Minimum</th> <th>Maximum</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>75</td> <td>5</td> <td>4</td> <td>10</td> <td>2</td> </tr> <tr> <td>2</td> <td>150</td> <td>8</td> <td>4</td> <td>10</td> <td>2</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>The search ellipses were oriented with their major axis along the heaps, as indicated by the variography and the flat lying geometry.</li> <li>The sample distance is, on average, 100m in lateral extent and 1m in vertical, see example cross section in Appendix 3. Lateral and variogrammes are presented in Appendix 5.</li> <li>No prior estimates are known to exist; however, the internal Grängesberg production statistics show that the sand typically contained over 5 % P<sub>2</sub>O<sub>5</sub> over the years since production began in 1935. This coincides well with the estimated average in the current estimate of 5,44 % P<sub>2</sub>O<sub>5</sub>.</li> <li>No cut-off has been applied; the deposit will be mined in its entirety.</li> <li>No reconciliation has been possible since no production has taken place.</li> </ul>		Search radii		No. of samples		No. holes	Pass	Major	Minor	Minimum	Maximum	1	75	5	4	10	2	2	150	8	4	10	2
	Search radii		No. of samples		No. holes																				
Pass	Major	Minor	Minimum	Maximum																					
1	75	5	4	10	2																				
2	150	8	4	10	2																				
Moisture	<ul style="list-style-type: none"> <li>Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.</li> </ul>	<ul style="list-style-type: none"> <li>The moisture contents have been determined by weighing the samples as they came into the laboratory (humid) and after drying overnight at 110°C, see Appendix 6. The average moisture contents is 15,3%. The tonnage has been adjusted accordingly to reflect dry tonnes, see Appendix 7.</li> </ul>																							
Cut-off parameters	<ul style="list-style-type: none"> <li>The basis of the adopted cut-off grade(s) or quality parameters applied.</li> </ul>	<ul style="list-style-type: none"> <li>No cut-off has been applied; the deposit will be mined in its entirety.</li> </ul>																							

Criteria	JORC Code explanation	Commentary
<i>Mining factors or assumptions</i>	<ul style="list-style-type: none"> <li>Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.</li> </ul>	<ul style="list-style-type: none"> <li>Drilling has shown negligible amounts of non-mineralised material exist within the repository. As such collection of the material by way of typical surface mining equipment is plausible with minimal dilution.</li> <li>Front end loaders or excavators with long sticks loading into trucks are considered the most likely method of material recovery. Material would then be transported to the processing facility, located a few hundred meters from the site of the repository.</li> </ul>
<i>Metallurgical factors or assumptions</i>	<ul style="list-style-type: none"> <li>The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.</li> </ul>	<ul style="list-style-type: none"> <li>Bench scale and mini-pilot test work has been completed using samples and composites produced from the recent drilling activities.</li> <li>All test work has confirmed consistently achievable apatite recoveries.</li> <li>Current assumptions for the metallurgy of the sand are: <ol style="list-style-type: none"> <li>Average P<sub>2</sub>O<sub>5</sub> grade of the sand is 5,44%.</li> <li>76,7% apatite recovery is achievable to a concentrate grading 37,3% P<sub>2</sub>O<sub>5</sub> (with optimization still ongoing).</li> </ol> </li> <li>A conceptual flowsheet is presented in Appendix 8.</li> </ul>
<i>Environmental factors or assumptions</i>	<ul style="list-style-type: none"> <li>Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.</li> </ul>	<ul style="list-style-type: none"> <li>Site selection for a processing facility and storage of by products is at an advanced stage.</li> <li>Residual material after apatite extraction is being considered for deposition in the historical Grängesberg open pit, which today waterfilled.</li> </ul>
<i>Bulk density</i>	<ul style="list-style-type: none"> <li>Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.</li> <li>The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.</li> <li>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</li> </ul>	<ul style="list-style-type: none"> <li>The bulk density has been determined in a third campaign by drilling down and filling a plastic tube with material. The contents (samples) have been weighed as sampled (wet) and after drying. A clear tendency of increased density with depth can be observed. This is also expected since material located at depth should be more consolidated.</li> <li>A total of 4 density stations were investigated, with samples every 1,2 m down to a maximum depth of 10,8 m. A total of 30 density samples were taken. The densities vary between 1,68 and 2,18 tonnes/m<sup>3</sup>.</li> <li>The resulting density function is: <b>Density = 1,84 + 0,07*depth</b></li> </ul>



Criteria	JORC Code explanation	Commentary
<i>Classification</i>	<ul style="list-style-type: none"> <li>• <i>The basis for the classification of the Mineral Resources into varying confidence categories.</i></li> <li>• <i>Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).</i></li> <li>• <i>Whether the result appropriately reflects the Competent Person's view of the deposit.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The determination of the volume and grade variations in the tailings dam is considered to be of good quality and is not likely to change significantly, should more sampling through drilling be carried out.</li> <li>• The determination of density shows greater variation, and the tonnage factor to convert block volumes to tonnage is therefore more uncertain.</li> <li>• Based on the above, the material in the dam is classified as Indicated Mineral Resources.</li> </ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li>• <i>The results of any audits or reviews of Mineral Resource estimates.</i></li> </ul>	<ul style="list-style-type: none"> <li>• No audit has been carried out.</li> </ul>
<i>Discussion of relative accuracy/confidence</i>	<ul style="list-style-type: none"> <li>• <i>Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.</i></li> <li>• <i>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</i></li> <li>• <i>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Comparison in plan and section of assayed grades in samples to those of the interpolated blocks show good correlation.</li> <li>• The nature of the deposit, with no nuggets, results in very low local grade variations.</li> <li>• The author considers the drilling density sufficient for assigning Indicated Mineral Resources.</li> </ul>

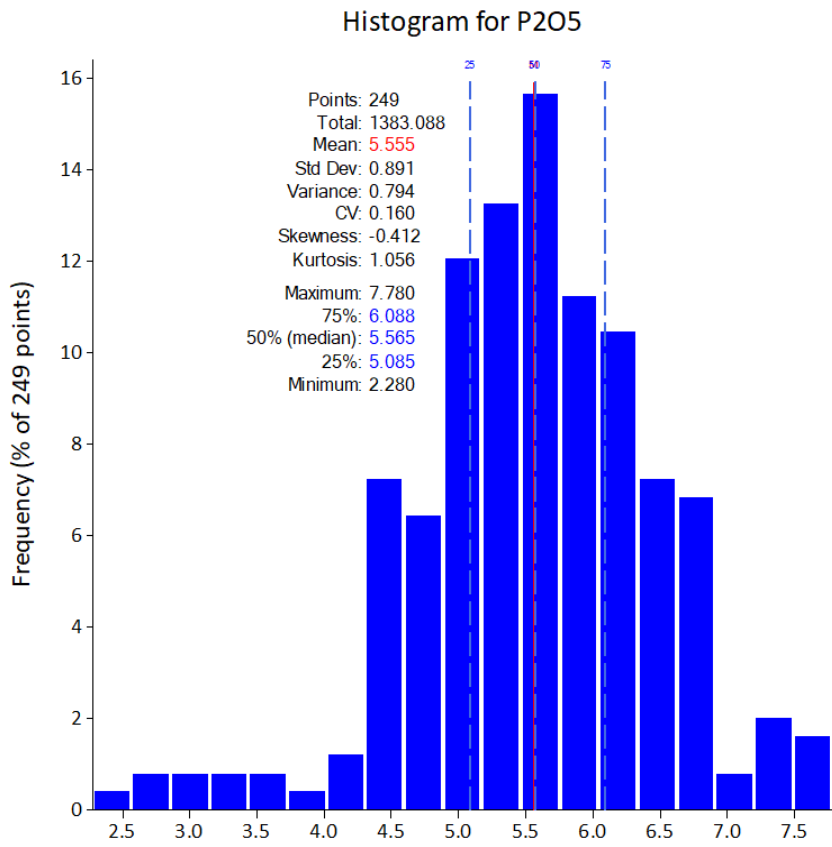
Appendix 1. Sample location map.



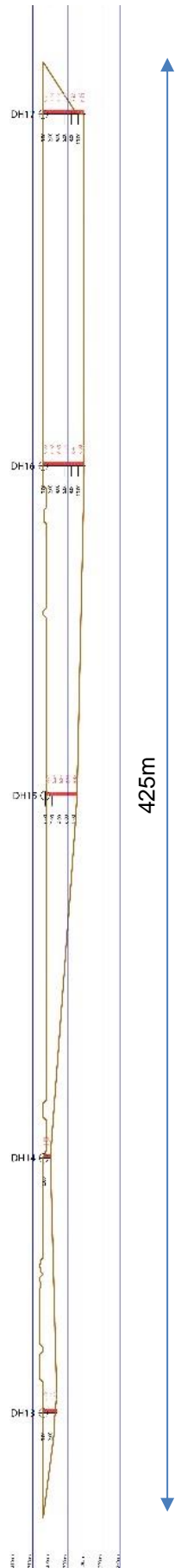
Appendix 2. Collar location, lengths and type of hole for the 49 sampled and assayed and the 4 density and moisture drill holes.

	ID	x	y	z	Depth
<b>First campaign</b>	JM01	498637	6658869	306.06	3.00
	JM02	498611	6658748	306.09	2.00
	JM03	498633	6658826	306.10	1.00
	JM04	498665	6658998	308.09	4.75
	JM05	498725	6658987	309.09	4.00
	JM06	498697	6659096	310.60	4.00
	JM07	498727	6659182	312.08	4.00
	JM08	498764	6659278	312.05	4.00
	JM09	498804	6659193	312.08	4.00
	JM10	498620	6659052	309.04	4.00
	JM11	498590	6658909	306.04	2.50
	JM12	498731	6658872	307.10	3.00
	JM13	498661	6659241	312.10	4.00
<b>Second campaign</b>	DH01	498647.4	6659300	311.65	9.00
	DH02	498743.5	6659297	312.36	10.00
	DH03	498642.2	6659196	311.87	15.00
	DH04	498757	6659199	312.27	11.00
	DH05	498827.5	6659200	312.42	7.00
	DH06	498645.4	6659097	309.76	14.00
	DH07	498750	6659102	315.68	14.00
	DH08	498837.1	6659089	310.71	5.00
	DH09	498558	6658986	308.14	7.00
	DH10	498647.4	6659000	308.98	13.00
	DH11	498746.3	6659003	309.66	13.00
	DH13	498377.7	6658898	307.10	3.80
	DH14	498450.8	6658900	306.94	1.90
	DH15	498554.7	6658905	306.52	9.00
	DH16	498649.2	6658899	307.10	12.00
	DH17	498749.9	6658894	307.10	12.00
	DH19	498383	6658797	306.10	1.00
	DH20	498454.2	6658804	305.38	7.00
	DH21	498554.6	6658797	305.10	11.00
	DH22	498651.7	6658796	305.10	9.00
DH23	498750.2	6658800	305.10	8.00	
DH28	498775.2	6658717	305.27	8.00	
DH29	498489.1	6658855	305.10	5.40	
DH30	498703.4	6658843	306.53	11.00	
<b>Density &amp; moisture samples</b>	DY01	498750	6659250	312.10	10.80
	DY02	498700	6659100	311.15	8.40
	DY03	498550	6658950	307.15	7.20
	DY04	498700	6658950	308.15	10.00
<b>Fourth campaign</b>	DH31	498425	6658700	305.05	6.40
	DH32	498525	6658700	305.05	12.50
	DH33	498625	6658700	305.05	6.00
	DH34	498725	6658700	305.05	7.30
	DH35	498425	6658650	305.05	7.50
	DH36	498525	6658650	305.05	12.50
	DH37	498625	6658650	305.05	7.00
	DH38	498725	6658650	305.05	6.50
	DH39	498425	6658575	305.05	9.30
	DH40	498525	6658575	305.05	11.90
	DH41	498625	6658575	305.05	13.00
	DH42	498725	6658575	305.05	7.00

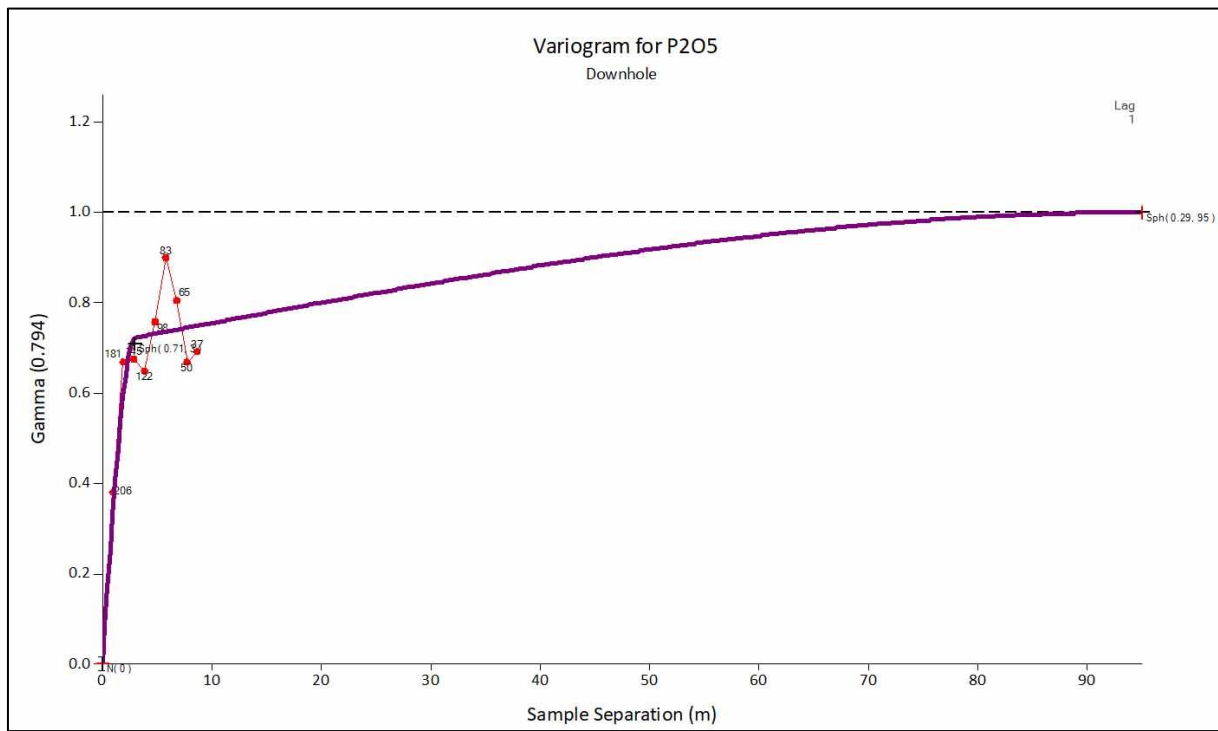
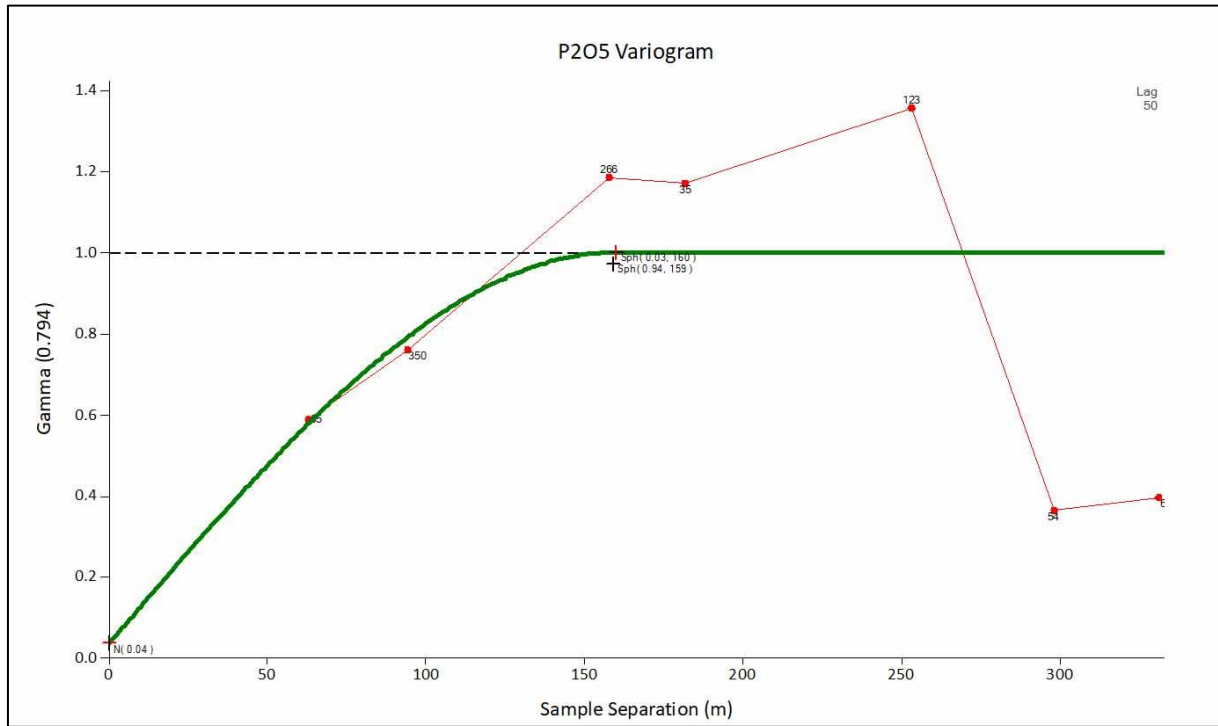
Appendix 3. Histogram for P<sub>2</sub>O<sub>5</sub>.



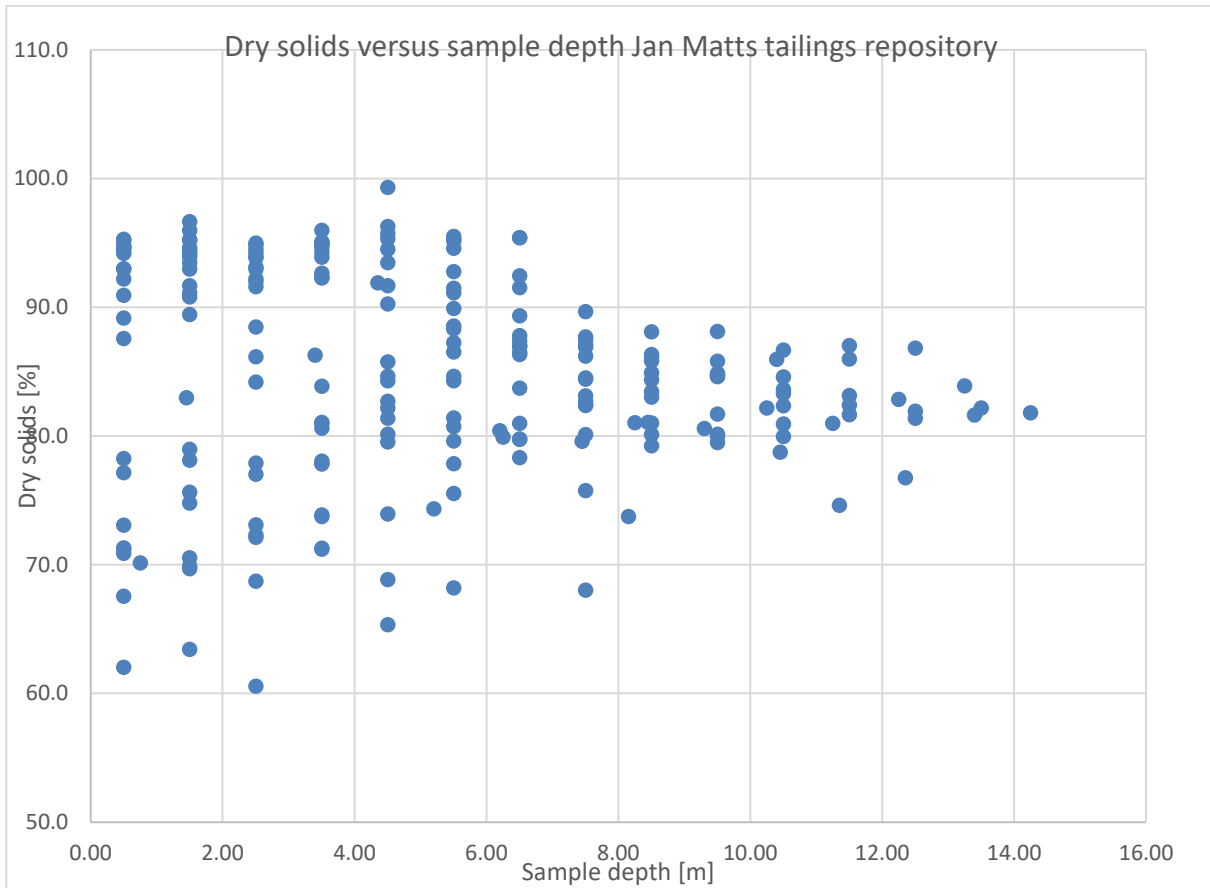
Appendix 4. Example cross sections.



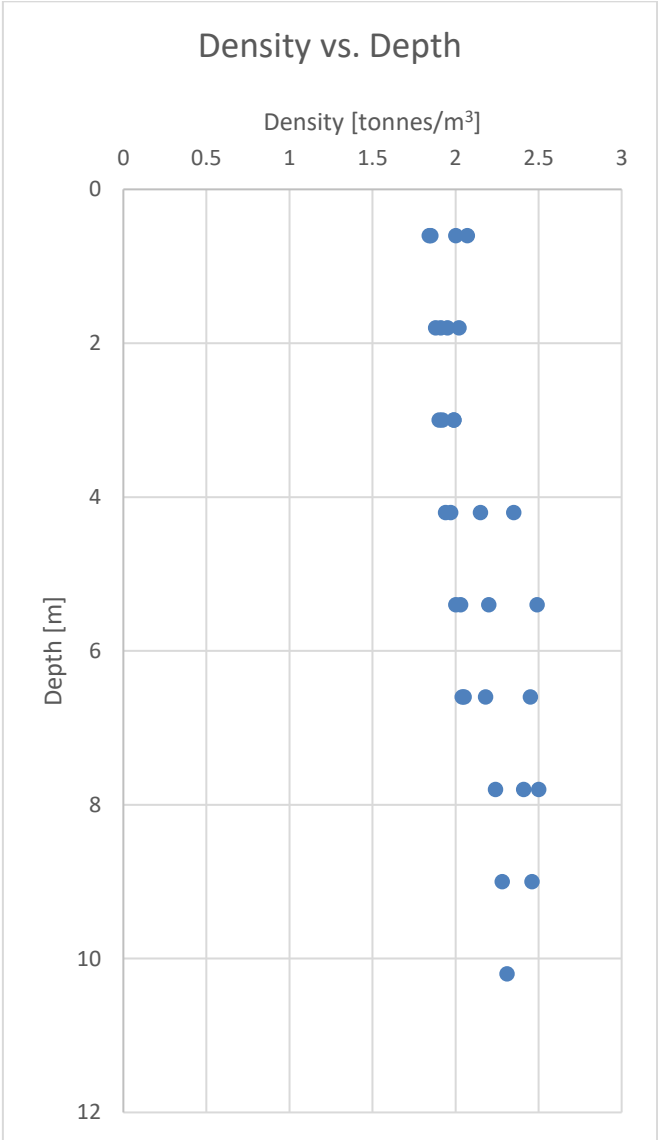
Appendix 5. Variogram along the deposit and downhole for P<sub>2</sub>O<sub>5</sub>.



Appendix 6. Results of moisture determinations.



Appendix 7. Results of density determinations.





Appendix 8. Conceptual flowsheet.

