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Bregenz, on 25.01.2006



Amt der Vorarlberger Landesregierung

: VIId-0504.03-2003/0016

Municipal market Rankweil  
On Marketplace  
6830 Rankweil  
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Information:  
Dr. Klaus König  
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Subject: Horse farm Dünser, Rankweil-wide Ried;  
Assembly / drainage of horse boxes and exercise areas;  
Proposal of the technical solution including evidence;  
References: Bills market town of Rankweil ZI: III-131/9-965/6, 18.Nov. 2004  
-11 - (4 photographic imagery)  
Attachments:

**Opinion inc proposal  
Gewässerschutztechnischen the official experts**

**I. findings:**

On 18.11.2005 (about 13:00 pm to approximately 14:30 pm) was a local inspection, the results of which are summarized as follows:

***Participants:***

- Mr. Markus Dünser, operators
  - Mr. Christoph Loacker, Loacker sports and horticulture Ltd.
  - DI Guntram alga, WPA Ltd.
  - DI John Heinzle, WPA Ltd.
  - Employees of Loacker Ltd.
  - Dr Klaus King, Department of Water Management - VIId
- Based on the current investigation results of a test area (drainage / Dränierung of horse boxes in the eastern area, see also Report of the undersigned, 04.05.2005, photo or 3 supplements - examination certificates of Böhler Analysis Ltd.) can be assumed that the nitrogen content of leachate from horseboxes maximum (in the case of the roof) in the range of 120 mg / l.  
For further calculations it is assumed that a horse in the field of 10 l / day urine of itself.

With a full load of concrete riding / breeding facility (with around 60 horses) is a nitrogen cargo in the range of 150 g / day or about 55 kg / year out. It is again important to note that a considerable part of the Urinaustrages outlet on the land (approximately 4700 sq metres), so to speak, spacy, takes place.

- Based on the current information on the ground regarding drainage of the whole facility by the following facts (Figures rounded) to be (see also Supplementary plan documents):
  - Total roof area approximately 6600 square meters (Abflussbeiwert approximately 0.9)
  - Total outlet area in the open, ie Naturally "berechnet", approximately 4700 square meters (Abflussbeiwert approximately 0.7)
  - "Open" (with, by natural irrigation at least partial "leaching" of urine) "Pedoks", about 450 square meters (Abflussbeiwert approximately 0.7)
  - . Rainfall in space Feldkirch: about 1200 mm / a (no evaporation loss)
- Based on the roof berechneten land (approximately 6600 m<sup>2</sup>) and the berechneten exercise areas including Pedoks (about 5100 m<sup>2</sup>) can be attached using the test results, and the approximate calculation of the EPA GmbH from the following emission levels expected to be:
  - Approx. 11,500 m<sup>3</sup> abzuleitendes OF-water (taking into account the relevant Abflussbeiwerte)
  - Total N content (probably as nitrate-N in this case) in izpeljanih OF-water (55 kg / 11,500 m<sup>3</sup>) to 5 mg / l.  
So would a common principle of derivation of the roof and water use, including the planned Löschwasserteich and subsequent derivation of the overflow into a surface water (as basically been planned and approved).  
**Note:** This tentative calculation / assessment it is assumed that the removal / disposal of Pferdemitester regularly (usually a day), so leaching same example By precipitation could be neglected.
- After intensive research, despite a state of the art drainage halbdurchlässiger surfaces (such as when the system is "grass concrete Ecoraster", see photo 4) in the case of horses exercise areas does not exist, basically on the spot following approach as environmentally sensible, and it recommended:
  - Common derive Dachwässern and freewheeling areas (surface waters, freewheeling areas covered by drainage, see photo 4) to a collection chamber, the Löschwasserteich upstream.
  - Common leachate collection of the covered boxing including Pedok's, and, from the surface waters to separate discharges initially shared collection (surface / water pit).  
**Note:** Due to the local soil conditions (largely barrierewirksamer clay soil beneath the bulk of the exercise areas, etc.) is a Drainagierung above the same, ie In the pebble bed as gewässerschutztechnisch yield reasonable and sufficient classified. The additional installation of a technical barrier (slide, similar to the experimental area north, see photo 3, slide under the boxes, collection outside the west) will be based on the situation on the ground is not considered necessary.
  - Common discharges of water from the collection chamber (where the surface waters and the waters from the boxes and Pedok's initiated) to Löschwasserteich (as a slide pond expanded), the same overflow into the flume north of the riding.
  - Planliche representation of drainage facilities, including Head of Management / sizing / material / shafts).

## II Opinion:

In the light of the findings described here is the execution of the drainage in this case as appropriate in principle, and the state of the art classified according to the following accompanying measures (for evidence) will be implemented:

- The collection for the roof and surface water, and the pit / Pedokentwässerung is so out that a separate collection / derivation of the latter in a downstream Sammelgrube subsequently easily technically possible.

**Note:** After careful considerations should be the first such Sammelgrube - provided on the composition of leachate from the pit / Pedok area required - a volume in the range of 200 m<sup>3</sup> (storage for half a year). A detailed calculation should only occasion in the case.

- Sampling / investigation of the water storage pond, or at least the basis of qualified samples, after commissioning of the plant. From a technical point enough for a first assessment abstraction / investigation in a 2-month interval, initially limited to one year. Based on the present (see attachment) Investigation data are investigating the following parameters are recommended:

- PH
- Specific conductance
- CSB
- Chloride
- Nitrate
- Sulphate
- Total phosphorus
- Ammonium-N
- Total N

The results are summarised in existence (tables) of the market town of Rankweil, therefore, in consultation with the relevant experts and the Water Authority further legal measures / guidelines, such as The construction of a Sammelbeckens formulated.

From the perspective of the undersigned is based on the current facts (ie, before the existence of the additional investigation data) Incidentally, no action is required for the water rights authority. Should the authority, however, the opposite view, it is to be notified / initiative calls.

Yours sincerely,

Signed Dr. Klaus König

[For information contact:](#)

3. [Agricultural District Authority \(ABB\), Attn Ing Kurt PETER, Josef-Huter-Straße 35, 6900 Bregenz, sent via VOKIS](#)
4. [Agriculture Chamber of Vorarlberg, Montfort Street 9-11 6900 Bregenz, SMTP: office@lk-vbg.at, ATTN Mr. Andreas Weratschnig](#)
5. [Lord, Markus Dünser, 6832 Röthis, SMTP: @markus.duenser.vol.at, agreed to the initiative](#)
6. [Company Loacker Sports-u horticulture GesmbH & Co, Dreiet 1, 6842 Koblach, SMTP: Office@laocker-co.com](#)

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and the Environment (BHFk-II), the castle moat 1, 6800  
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Photo 1: New Range Reithof Dünser, looking towards the west, as of 18.11.05



Photo 2: Detail Recording Reithof Dünser, looking towards the west, as of 18.11.05; Ummauerte areas behind excavator bucket seats are future boxing / Pedoks.



Photo 3: Riding Stables Dünser, boxing eastern area forecourt, "experimental drainage"



Photo 4: Horseback riding Dünser "grass concrete Ecoraster" Clear tread eastern area (east of the pit / of forecourt according photo 3), peripheral drainage drainage if necessary; 18.11.05