

Irrigation FACTSHEET



BRITISH
COLUMBIA

Ministry of Agriculture and Food

Order No. 512.000-1

Agdex: 562

May 1981

SUGGESTED MINIMUM WATER TREATMENT GUIDELINES FOR TRICKLE IRRIGATION SYSTEMS IN THE OKANAGAN VALLEY

INTRODUCTION

The information contained within this publication is derived from water quality data obtained during the summers of 1978, 1979 and 1980. These results are the best that can be generated at this time until further filtration data is made available.

The minimum water treatment guidelines are based upon the following design criteria:

For emitter orifices that are less than 1000 microns in diameters. Emitters with orifices larger than 1000 microns may not require sand filters unless the suspended solids frequently exceed 100 mg/l.

All suspended larger than $1/6^{\text{th}}$ of the emitter orifice diameter must be removed. (0.001 inches is equal to 25 microns).

The maximum flow rate through the sand filter is 20 gpm/ft² of bed area.

Back flushing of the sand filters is required when the pressure differential across the sand bed exceeds 5 psi.

All trickle irrigation systems should consider the following items for proper operation and maintenance.

- A coarse screen is required for removal of trash and large solid particles.
- If a sand filter is used, a screen should be installed on the downstream side of the filter. This back-up screen is required to prevent sand from entering the system should the sand filter malfunction or be operated incorrectly.
- Chlorine injection and line flushing are required on all irrigation districts. The individual operator in accordance with water quality must determine the scheduling of chlorination and line flushing.

Note Chlorine concentrations should not exceed 40 ppm when injected into a trickle irrigation system. Concentrations exceeding 40 ppm may precipitate solids that could plug the system.

For additional information, please contact the Resource Management Branch, BC Ministry of Agriculture and Food.

IRRIGATION DISTRICTS' SUGGESTED MINIMUM WATER TREATMENT GUIDELINES

Vernon Irrigation District (V.I.D.)

- Chlorination and lateral line flushing are required throughout the season due to presence of Fe and S.
- Suspended solids analysis show that high concentrations of organic and inorganic particles above and below 100 microns occur periodically throughout the irrigation season. Sand filters are suggested. An automatic back flush feature may be warranted in some areas of the V.I.D.

Oyama Irrigation District

- Frequent chlorination and line flushing may be required throughout the season due to high concentrations of Fe and S.
- Treatment with HCl may be required to clear and prevent scale build-up in emitters and lines due to hard water (Ca and Mg).
- Sand filters with automatic back flush are suggested to remove suspended solids.

Wood Lake Improvement District

- Chlorination treatment is required periodically throughout the irrigation season due to the occurrence of Fe.
- Periodic treatment with HCl may be required to prevent scale build-up in the system due to Ca and Mg concentrations.
- Sand filters with automatic back flush are suggested to remove slug loadings, which are evident throughout the season.

Windfield Okanagan Centre Irrigation District (W.O.C.I.D.)

- Chlorination may be required. Use as needed throughout the irrigation season.
- Screens (to 1/6th of the orifice diameter) are suggested. Sand filters are not necessarily required, but may assist trickle irrigation systems consisting of emitters with low flow rates and small orifices.

Glenmore Irrigation District (G.I.D.)

- Periodic treatment with chlorine may be required during the irrigation season due to the presence of Fe.
- Screening is suggested (particles 1/6th of the emitter orifice diameter should be removed). Manual cleaning of the screens should be sufficient.

Scotty Creek Irrigation District (S.C.I.D.)

- Chlorination treatment may be required periodically. (At least at the beginning and end of the irrigation season). Line flushing at periodic intervals will also be beneficial.
- Suspended solids analysis show high concentrations of organic and inorganic particles occurring throughout the season. Sand filters with automatic back flushing capacity are suggested.

Ellison Irrigation District (E.I.D.)

- Chlorination and line flushing required periodically throughout irrigation season due to presence of Fe and S.
- Slug loadings of inorganic and organic particles were observed throughout the irrigation seasons. Sand filters are suggested.

Black Mountain Irrigation District (B.M.I.D.)

- Chlorination treatment as required is suggested. (Chlorination and line flushing should be done at least at the beginning and end of each irrigation season).
- Slug loadings of mainly inorganic particles were observed throughout the season. Sand filters with manual back flush are suggested as minimum treatment.

South-East Kelowna Irrigation District (S.E.K.I.D.)

- Chlorination and line flushing required due to presence of Fe and S.
- Suspended solids analysis show a constant loading throughout the entire season. Although the amount of solids is not too severe, a sand filter is suggested. A manual back flush system should be sufficient if the filter is easily accessible. If the filter must operate without attention for periods greater than 24 hours, an automatic back flush unit should be utilized.

Lakeview Irrigation District (L.I.D.)

- Chlorination and line flushing are required due to high concentrations of S.
- Periodic treatment with HCl may be required to remove scale build-up in laterals and emitters due to high Ca concentrations.
- Screen system is suggested as minimum treatment. Particles greater than 1/6th of the orifice diameter must be screened from system.

Westbank Irrigation District (W.I.D.)

- Chlorination and line flushing required due to high concentrations of S.
- Treatment with HCl may be required at the beginning and/or end of season to maintain openings in laterals and emitters.
- Periodic slug loadings are evident at the beginning of the irrigation season. Sand filters with manual back flush are suggested.

Peachland Irrigation District

- Chlorination and line flushing are required throughout irrigation season due to presence of Fe and S. Since S concentrations are quite high, a rigorous chlorination schedule may be required.
- HCl treatment may be required periodically during the irrigation season due to high Ca concentrations and the high pH value.
- Sand filters with manual back flush are suggested.

Summerland Municipality System

(Garnet Valley System)

- Chlorination may be required periodically due to S concentrations.
- Treatment with HCl is suggested due to high concentrations of Ca and the high pH value.
- Suspended solids analysis show high concentrations of inorganic particles and medium concentration of organic particles for the first six weeks of the irrigation season. Sand filters with manual back flush are suggested as minimum treatment. An automatic back flush unit may be utilized for larger acreage systems.

(Trout Creek System)

- Chlorination due to S and Fe may be required.
- System should be treated with HCl at the beginning or end of the irrigation season to prevent buildup of scales on emitters and lateral lines.
- Screen system is suggested. Screen should remove all particles greater than 1/6th of the orifice diameter. If particulates from treatment with chlorine develop, a sand filter may be required.

Naramata Irrigation District (N.I.D.)

- Chlorination may be required during the irrigation season.
- Slug loadings were monitored throughout the irrigation season. Sand filters are required as minimum treatment.
- Automatic back flush may be required at the north end of the District, whereas manual back flush should be sufficient near the south end of the District.

Penticton Municipality

(Penticton Creek System)

- Chlorination and line flushing are required due to Fe and S concentrations.
- Slug loadings are not evident, therefore a screen system may be sufficient. A sand filter should be used if particulates from chlorination treatment develop.

(Ellison Creek System)

- Chlorination and line flushing are required due to presence of Fe and S.
- Slug loadings were monitored periodically during irrigation season. Sand filters with manual back flushing are suggested as minimum treatment.

Kaleden Irrigation District

- Chlorination and line flushing are required due to high concentrations of S.
- Treatment with HCl may be required throughout irrigation season due to Ca concentration and the high pH value.
- Screening of water is required (particles greater than 1/6th of orifice diameter should be removed).
- If screens plug up frequently due to particulates developed by chlorination treatment or otherwise, a sand filter may be required.

Okanagan Falls Irrigation District

- Chlorination and line flushing are required due to high S concentrations.
- Treatment with HCl required throughout season to prevent scale accumulation in laterals and emitters due to high Ca concentrations and high pH values.
- Screening of irrigation water is suggested. A sand filter may be required if particulates develop from chlorination treatment.

Black Sage Irrigation District

- Periodic chlorination is required due to S concentration.
- Treatment with HCl may be required throughout the irrigation season, periodically, to prevent scale buildup on emitters and lateral lines due to high pH value and Ca concentrations.
- Sand filter with manual back flush is suggested as minimum treatment.

Southern Okanagan Lands Irrigation District (S.O.L.I.D.)

- Chlorination and line flushing are required due to high S concentrations.
- Treatment with HCl is suggested at least at the beginning and/or at the end of the irrigation season. Ca concentrations and pH value are sufficient to warrant HCl treatment throughout the season.
- Screening of irrigation water is a suggested minimum. Screening which removes particles greater than 1/6th of the orifice diameter should be sufficient.
- Sand filters may be desired if emitters with long flow paths or small orifice openings are used, or if the system must operate unattended for extended periods of time. Manual back flushing of the sand filters should be sufficient.

Osoyoos Irrigation District

- Chlorination and line flushing required due to high concentrations of S.
- Periodic treatment of HCl is required to prevent scale buildup in emitters and lateral lines due to Ca concentrations and high pH values.
- Trickle system may get by with screening only, however for larger systems, a sand filter is suggested. Manual back flushing is acceptable. Sand filters will also be required if precipitates form due to chlorination treatment.

Fairview Heights Irrigation District

- Chlorination and line flushing are required as needed during irrigation season due to presence of S.
- Regular treatment with HCl may be required to reduce scale buildup due to high concentrations of Ca and Mg and the high pH values.
- Screening of irrigation water is suggested (particles larger than 1/6th of the orifice diameter must be screened out).

Cawston Irrigation District

- Chlorination and line flushing are required by system operating performance.
- Regular treatment with HCl may be required to reduce the scale buildup due to high concentrations of Ca and Mg.
- Screening of irrigation water is suggested (particles larger than 1/6th of emitter orifice diameter must be screened out).

Keremeos Irrigation District

- Chlorination and line flushing are required during irrigation season.
- Regular treatment with HCl is required to reduce scale buildup in laterals and emitters due to high concentrations of Ca and Mg and the high pH values.
- Screening of irrigation water is suggested (particles larger than 1/6th of the orifice diameter must be screened out).

FOR FURTHER INFORMATION, CONTACT

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