

---

## **APPENDIX F**

### **Extracts from Guidelines**

---

<b>Table 1: USEPA Reclaimed Water Quality Guidelines</b>		
<b>Type of reuse</b>	<b>Treatment required</b>	<b>Water quality</b>
Food crops not commercially processed	Secondary Filtration Disinfection	< 2.2 FC/100 ml; 1 mg l <sup>-1</sup> Cl <sub>2</sub> after 30 minutes contact; Turbidity ≤2 NTU; BOD ≤10 mg l <sup>-1</sup>
Food crops commercially processed including orchards and vineyards	Secondary Disinfection	≤200 FC/100 ml; 1 mg l <sup>-1</sup> Cl <sub>2</sub> after 30 minutes contact; TSS ≤30 mg l <sup>-1</sup> ; BOD ≤30 mg l <sup>-1</sup>
Nonfood crops, pasture, fodder, fibre and seed	Secondary Disinfection	≤200 FC/100 ml; 1 mg l <sup>-1</sup> Cl <sub>2</sub> after 30 minutes contact; TSS ≤30 mg l <sup>-1</sup> ; BOD ≤30 mg l <sup>-1</sup>

For crop irrigation the water quality constituents of concern are salinity, sodium, trace elements (metals), chlorine residual and nutrients (nitrogen). Boron (from detergents) accumulation may also be problematical.

<b>Table 2: Acceptable levels for trace metal and other constituents (DWAF)</b>		
<b>Constituent</b>	<b>Long-term use &gt; 20 years mg l<sup>-1</sup></b>	<b>Short-term use ≤20 years mg l<sup>-1</sup></b>
Aluminium	5.0	20
Arsenic	0.1	2.0
Beryllium	0.1	0.5
Boron	0.75	2.0
Cadmium	0.01	0.05
Chromium	0.1	1.0
Cobalt	0.05	5.0
Copper	0.2	5.0
Fluoride	1.0	15
Iron	5.0	20
Lead	5.0	10
Lithium	2.5	2.5
Manganese	0.2	10
Molybdenum	0.01	0.05
Nickel	0.2	2.0
Selenium	0.02	0.02
Vanadium	0.1	1.0
Zinc	2	10
pH	6.0	-
TDS	500-2000	-
Chlorine residual	< 1	-

APPENDIX: RECYCLED WATER USES IN CALIFORNIA				
USE	Treatment Levels			
	Disinfected Tertiary Recycled Water	Disinfected Secondary-2.2 Recycled Water	Disinfected Secondary-23 Recycled Water	Undisinfected Secondary Recycled Water
Irrigation				
Food crops where recycled water contacts the edible portion of the crop, including all root crops	Allowed	Not allowed	Not allowed	Not allowed
Parks and playgrounds	Allowed	Not allowed	Not allowed	Not allowed
School yards	Allowed	Not allowed	Not allowed	Not allowed
Residential landscaping	Allowed	Not allowed	Not allowed	Not allowed
Unrestricted access golf courses	Allowed	Not allowed	Not allowed	Not allowed
Any other irrigation uses not prohibited by other provisions of the California Code of Regulations	Allowed	Not allowed	Not allowed	Not allowed
Food crops where edible portion is produced above ground and not contacted by recycled water	Allowed	Allowed	Not allowed	Not allowed
Cemeteries	Allowed	Allowed	Allowed	Not allowed
Freeway landscaping	Allowed	Allowed	Allowed	Not allowed
Restricted access golf courses	Allowed	Allowed	Allowed	Not allowed
Ornamental nursery stock and sod farms	Allowed	Allowed	Allowed	Not allowed
Pasture for milk animals	Allowed	Allowed	Allowed	Not allowed
Nonedible vegetation with access control to prevent use as a park, playground or school yard	Allowed	Allowed	Allowed	Not allowed
Orchards with no contact between edible portion and recycled water	Allowed	Allowed	Allowed	Allowed
Vineyards with no contact between edible portion and recycled water	Allowed	Allowed	Allowed	Allowed
Non food-bearing trees, including Christmas trees not irrigated less than 14 days before harvest	Allowed	Allowed	Allowed	Allowed
Fodder crops (e.g. alfalfa) and fiber crops (e.g. cotton)	Allowed	Allowed	Allowed	Allowed
Seed crops not eaten by humans	Allowed	Allowed	Allowed	Allowed
Food crops that undergo commercial pathogen-destroying processing before consumption by humans	Allowed	Allowed	Allowed	Allowed
Ornamental nursery stock, sod farms not irrigated less than 14 days before harvest	Allowed	Allowed	Allowed	Allowed

	Treatment Levels			
	Disinfected Tertiary Recycled Water	Disinfected Secondary- 2.2 Recycled Water	Disinfected Secondary- 2.3 Recycled Water	Undisinfected Secondary Recycled Water
Supply for Cooling or Air Conditioning				
Industrial or commercial cooling or air conditioning involving cooling tower, evaporative condenser, or spraying that creates a mist	Allowed <u>3</u>	Not allowed	Not allowed	Not allowed
Industrial or commercial cooling or air conditioning not involving a cooling tower, evaporative condenser, or spraying that creates a mist	Allowed	Allowed	Allowed	Not allowed

Supply for Impoundment	Treatment Levels			
	Disinfected Tertiary Recycled Water	Disinfected Secondary-2.2 Recycled Water	Disinfected Secondary-23 Recycled Water	Undisinfected Secondary Recycled Water
Non-restricted recreational impoundments, with supplemental monitoring for pathogenic organisms	Allowed 2	Not allowed	Not allowed	Not allowed
Restricted recreational impoundments and publicly accessible fish hatcheries	Allowed	Allowed	Not allowed	Not allowed
Landscape impoundments without decorative fountains	Allowed	Allowed	Allowed	Not allowed

Other Uses	Treatment Levels			
	Disinfected Tertiary Recycled Water	Disinfected Secondary-2.2 Recycled Water	Disinfected Secondary-23 Recycled Water	Undisinfected Secondary Recycled Water
	Allowed under special case-by-case permits by RWQCBs 4			
Groundwater recharge	Allowed	Not allowed	Not allowed	Not allowed
Flushing toilets and urinals	Allowed	Not allowed	Not allowed	Not allowed
Priming drain traps	Allowed	Not allowed	Not allowed	Not allowed
Industrial process water that may contact workers	Allowed	Not allowed	Not allowed	Not allowed
Structural fire fighting	Allowed	Not allowed	Not allowed	Not allowed
Decorative fountains	Allowed	Not allowed	Not allowed	Not allowed
Commercial laundries	Allowed	Not allowed	Not allowed	Not allowed
Consolidation of backfill material around potable water pipelines	Allowed	Not allowed	Not allowed	Not allowed
Artificial snow making for commercial outdoor uses	Allowed	Not allowed	Not allowed	Not allowed
Commercial car washes not done by hand & excluding the general public from washing process	Allowed	Not allowed	Not allowed	Not allowed
Industrial boiler feed	Allowed	Allowed	Allowed	Not allowed
Nonstructural fire fighting	Allowed	Allowed	Allowed	Not allowed
Backfill consolidation around nonpotable piping	Allowed	Allowed	Allowed	Not allowed
Soil compaction	Allowed	Allowed	Allowed	Not allowed
Mixing concrete	Allowed	Allowed	Allowed	Not allowed
Dust control on roads and streets	Allowed	Allowed	Allowed	Not allowed
Cleaning roads, sidewalks and outdoor work areas	Allowed	Allowed	Allowed	Not allowed
Flushing sanitary sewers	Allowed	Allowed	Allowed	Allowed

# Guide: Permissible utilisation and disposal of treated sewage effluent



DEPARTMENT OF NATIONAL HEALTH AND  
POPULATION DEVELOPMENT

Civitas Building  
Private Bag X 828  
Pretoria 0001  
Republic of South Africa

Telegrams:  
"SAGWEP"  
Telephone: 3255100  
Telefax: 3255706

30 May 1978

**GUIDE: PERMISSIBLE UTILISATION AND DISPOSAL OF TREATED SEWAGE EFFLUENT**

This guide sets out the present policy of the Department and replaces all previous relevant guides. Any person intending to use treated effluent must obtain prior permission to do so from the Regional Director concerned.

This guide is applicable only to treated sewage effluent which is mainly of domestic origin and contains little or no industrial effluent.

The Regional Directors have been empowered to relax the requirements specified in this guide or to impose additional or more stringent requirements in the light of special circumstances in specific cases.

This guide defines the following:

- A. Classification of treated effluents
- B. Directives for the use of treated effluent for irrigation purposes.
- C. Directives for other uses of treated effluents.
- D. Methods of disposal and discharge of treated effluents.
- E. General directives and precautionary measures.



CLASSIFICATION OF TREATED EFFLUENTS (SEWAGE PURIFICATION WORKS)		A
<b><u>PS - PRIMARY AND SECONDARY TREATMENT – HUMUS TANK EFFLUENT</u></b>	<b><u>OD – OXIDATION POND SYSTEM</u></b>	
<p>Conventional sewage purification according to accepted design criteria<sup>#</sup>. This includes screening and primary settling followed by biological purification such as the biological filterbed process or activated sludge process. Secondary treatment also includes the settling or clarification after biological or alternative purification methods.</p>	<p><u>Final effluent contains a maximum of 1 000 E. coli/100ml</u></p> <p>The pond system should be designed according to a recognised standard<sup>#</sup> and operated in a nuisance-free manner. The combined retention time of the primary pond and approximately 4 secondary ponds should usually be at least 45 days. This system should drain into an irrigation dam of which the reserve storage capacity during dry weather conditions is at least 12 days. Unless sufficient space is available and the ponds are sufficiently remote from built-up areas, this system is not recommended for communities with a population exceeding 5 000.</p>	
<b><u>PST - PRIMARY, SECONDARY AND TERTIARY TREATMENT</u></b>	<p>Every oxidation pond system which is <u>not</u> able to deliver effluent of the above-mentioned quality should, for the purpose of this guide, be regarded on its merits as no more than equivalent to PS.</p>	
<p><u>Final effluent complies with the GENERAL STANDARD*, with the E.coli count relaxed to a maximum of 1000 E. coli /100 ml</u></p> <p>In addition to the above-mentioned primary and secondary or equivalent treatment one or more tertiary treatments, viz. land treatment, maturation pond, filtration, chlorination or other types of disinfection, etc., should be applied.</p>	<b><u>SEPTIC TANK EFFLUENT</u></b>	
<b><u>STD - PRIMARY, SECONDARY AND TERTIARY TREATMENT</u></b>	(Primary settling and limited biological purification)	
<p>(Compare with PST)</p> <p><u>Final effluent complies with the GENERAL STANDARD* viz. inter alia NIL E. coli/100 ml</u></p>	<p>This effluent must undergo further secondary and tertiary or equivalent treatment before it may be utilised for the purposes indicated in this guide.</p>	
<b><u>SP-STD – ADVANCED PURIFICATION</u></b>	<p>For the direct use or disposal, only nuisance-free land treatment or irrigation of fenced-in plantations will be permitted on its merits.</p>	
<p><u>Final effluent complies with at least the SPECIAL STANDARD* and the quality compares favourably with that recommended for drinking water</u></p> <p>In addition to the above-mentioned primary, secondary and tertiary treatment, advanced purification also includes special physico-chemical purification or other advanced techniques.</p>		

\* GENERAL AND SPECIAL STANDARD

Quality requirements for purified sewage effluent as laid down by the Department of Water Affairs – see Government Notice R553 in Government Gazette Extraordinary of April 1962, and any amendments thereto. (E. coli = typical faecal coli).

<sup>#</sup> DESIGN CRITERIA

Design criteria such as those set out in A Guide to the Design of Sewage Purification Works of the Institute of Water Pollution Control (I.W.P.C.), Southern African Branch (November 1973).

THE ABOVE CLASSIFICATION OF TREATED SEWAGE EFFLUENT TYPES IS USED IN THE FOLLOWING TABLES

DIRECTIONS FOR THE UTILISATION OF TREATED EFFLUENTS FOR IRRIGATION						B
IRRIGATION OF	PS – PRIMARY AND SECONDARY	PST – PRIMARY, SECONDARY AND TERTIARY	STD – GENERAL STANDARD	SP-STD – ADVANCED PURIFICATION	OD – OXIDATION POND SYSTEM	
1	<ul style="list-style-type: none"> <li>VEGETABLES AND CROPS CONSUMED RAW BY MAN (3 EXCLUDED)</li> <li>LAWNS AT SWIMMING POOLS, NURSERY SCHOOLS, CHILDREN’S PLAYGROUNDS</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>
2	<ul style="list-style-type: none"> <li>CROPS FOR HUMAN CONSUMPTION WHICH ARE <u>NOT</u> EATEN RAW (VEGETABLES, FRUIT, SUGAR-CANE)</li> <li>CULTIVATION OF CUT FLOWERS (SEE ALSO 6)</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> <li>EFFECTIVE DRAINING AND DRYING BEFORE HARVESTING IS ESSENTIAL</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE ON ITS MERITS</li> <li>EFFECTIVE DRAINING AND DRYING BEFORE HARVESTING IS ESSENTIAL</li> </ul>	
3	<ul style="list-style-type: none"> <li>FRUIT TREES AND VINEYARDS: FOR THE CULTIVATION OF FRUIT WHICH IS EATEN RAW BY MAN (SEE 2 – FRUIT WHICH IS NOT EATEN RAW)</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>FLOOD IRRIGATION PERMISSIBLE</li> <li>DRIP AND MICRO-IRRIGATION PERMISSIBLE ON THEIR MERITS PROVIDED FRUITS ARE NOT DIRECTLY EXPOSED TO SPRAY</li> <li>EFFECTIVE DRAINING AND DRYING BEFORE HARVESTING</li> <li>FALLEN FRUIT IS UNSUITABLE FOR HUMAN CONSUMPTION</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>FLOOD, DRIP AND MICRO-IRRIGATION PERMISSIBLE ON THEIR MERITS PROVIDED FRUITS ARE NOT DIRECTLY EXPOSED TO SPRAY</li> <li>EFFECTIVE DRAINING AND DRYING BEFORE FRUITS ARE HARVESTED</li> <li>FALLEN FRUIT IS UNSUITABLE FOR HUMAN CONSUMPTION</li> </ul>

	IRRIGATION OF	PS – PRIMARY AND SECONDARY	PST – PRIMARY, SECONDARY AND TERTIARY	STD – GENERAL STANDARD	SP-STD – ADVANCED PURIFICATION	OD – OXIDATION POND SYSTEM
4	<ul style="list-style-type: none"> <li>GRAZING FOR CATTLE EXCLUDING MILK PRODUCING ANIMALS (SEE 5)</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE BUT NOT DURING GRAZING</li> <li>GRAZING ONLY PERMISSIBLE AFTER EFFECTIVE DRAINING AND DRYING – NO POOLS</li> <li>NOT PERMISSIBLE AS DRINKING WATER FOR ANIMALS</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> <li>PERMISSIBLE AS DRINKING WATER FOR ANIMALS</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> <li>PERMISSIBLE AS DRINKING WATER FOR ANIMALS</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE BUT NOT DURING GRAZING</li> <li>GRAZING ONLY PERMISSIBLE AFTER EFFECTIVE DRAINING AND DRYING – NO POOLS</li> <li>NOT PERMISSIBLE AS DRINKING WATER FOR ANIMALS</li> </ul>
5	<ul style="list-style-type: none"> <li>GRAZING FOR MILK PRODUCING ANIMALS (DEFINITION OF MILK – SECTION I(XV) OF THE HEALTH ACT 1977 (ACT 63 OF 1977)</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> <li>PERMISSIBLE AS DRINKING WATER FOR ANIMALS</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> <li>PERMISSIBLE AS DRINKING WATER FOR ANIMALS</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>
6	<ul style="list-style-type: none"> <li>CROPS NOT FOR GRAZING, BUT UTILISED AS DRY FODDER</li> <li>CROP CULTIVATED FOR SEED PURPOSES ONLY</li> <li>TREE PLANTATIONS</li> <li>NURSERIES – CUT FLOWERS EXCLUDED (SEE 2)</li> </ul> <p>ANY PARK OR SPORTSFIELD ONLY DURING DEVELOPMENT AND BEFORE OPENING THEREFOR</p>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE ON ITS MERITS</li> <li>NO OVER-IRRIGATION OR POOL FORMING</li> <li>NO SMELL NUISANCE</li> <li>PROPERLY FENCED</li> <li>NO PUBLIC ALLOWED</li> <li>NO MEAT ANIMALS, MILK PRODUCING ANIMALS OR POULTRY ALLOWED</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE (SEE ALSO 4 AND 5)</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE (SEE ALSO 4 AND 5)</li> </ul>

IRRIGATION OF	PS – PRIMARY AND SECONDARY	PST – PRIMARY, SECONDARY AND TERTIARY	STD – GENERAL STANDARD	SP-STD – ADVANCED PURIFICATION	OD – OXIDATION POND SYSTEM
<div>7</div> <ul style="list-style-type: none"> <li>PARKS AND SPORTSFIELDS (SEE 6)</li> <li>LAWNS AT SWIMMING POOL EXCLUDED (SEE 1)</li> </ul> <hr/> <ul style="list-style-type: none"> <li>(i) PARKS, ONLY FOR BEAUTIFYING FLOWERBEDS, TRAFFIC ISLANDS ETC. – I.E.. NOT A RECREATION AREA</li> </ul> <hr/> <ul style="list-style-type: none"> <li>(ii) SPORTSFIELDS WHERE LIMITED CONTACT IS MADE WITH THE SURFACE EG. GOLF COURSES, CRICKET, HOCKEY AND SOCCER FIELDS, ETC.</li> </ul>	<ul style="list-style-type: none"> <li>ONLY FLOOD IRRIGATION PERMISSIBLE</li> <li>NO SPRINKLER IRRIGATION PERMISSIBLE</li> <li>NO PUBLIC DURING IRRIGATION</li> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>FLOOD IRRIGATION PERMISSIBLE</li> <li>SPRINKLER IRRIGATION PERMISSIBLE ON ITS' MERITS</li> <li>NO PUBLIC DURING IRRIGATION</li> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> <li>NO OVER-IRRIGATION AND NO POOL FORMING</li> <li>NO PUBLIC OR PLAYERS DURING IRRIGATION</li> <li>PUBLIC AND/OR PLAYERS ADMITTED ONLY AFTER EFFECTIVE DRAINING AND DRYING</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> <li>NO PUBLIC DURING IRRIGATION</li> </ul> <hr/> <ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> <li>NO OVER-IRRIGATION AND NO POOL FORMING</li> <li>NO PUBLIC AND/OR PLAYERS DURING IRRIGATION</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> </ul> <hr/> <ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> <li>NO PUBLIC AND/OR PLAYERS DURING IRRIGATION</li> </ul>	<ul style="list-style-type: none"> <li>FLOOD IRRIGATION PERMISSIBLE</li> <li>SPRINKLER IRRIGATION PERMISSIBLE ON ITS' MERITS</li> <li>NO PUBLIC DURING IRRIGATION</li> <li>FLOOD IRRIGATION PERMISSIBLE</li> <li>SPRINKLER IRRIGATION PERMISSIBLE ON ITS' MERITS</li> <li>NO OVER-IRRIGATION AND NO POOL FORMING</li> <li>NO PUBLIC AND/OR PLAYERS DURING IRRIGATION</li> <li>PUBLIC AND/OR PLAYERS ADMITTED ONLY AFTER EFFECTIVE DRAINING AND DRYING</li> </ul>

IRRIGATION OF	PS – PRIMARY AND SECONDARY	PST – PRIMARY, SECONDARY AND TERTIARY	STD – GENERAL STANDARD	SP-STD – ADVANCED PURIFICATION	OD – OXIDATION POND SYSTEM
<ul style="list-style-type: none"> <li>(iii) SPORTSFIELDS WHERE CONTACT IS OFTEN MADE WITH THE SURFACE , EG. RUGBY FIELDS, ATHLETICS TRACKS, ETC.</li> <li>SCHOOL GROUNDS</li> <li>PUBLIC PARKS – SPECIAL CHILDREN’S PLAYGROUNDS EXCLUDED (SEE 1</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>FLOOD IRRIGATION PERMISSIBLE</li> <li>SPRINKLER IRRIGATION PERMISSIBLE ON ITS’ MERITS</li> <li>NO OVER-IRRIGATION AND NO POOL FORMING</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> <li>NO OVER-IRRIGATION AND NO POOL FORMING</li> </ul>	<ul style="list-style-type: none"> <li>ANY TYPE OF IRRIGATION PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>ONLY FLOOD IRRIGATION PERMISSIBLE</li> <li>SPRINKLER IRRIGATION NOT PERMISSIBLE</li> <li>NO OVER-IRRIGATION AND NO POOL FORMING</li> </ul>
		<ul style="list-style-type: none"> <li>NO PUBLIC OR PLAYERS DURING IRRIGATION</li> <li>PUBLIC AND/OR PLAYERS ADMITTED ONLY AFTER EFFECTIVE DRAINING AND DRYING</li> </ul>			

IRRIGATION – GENERAL REMARKS AND PRECAUTIONS	
<p>a) In order to obviate the irrigation system causing a nuisance in time, evidence must be produced that the type of soil and the size of the surface as well as the type of crop concerned are suitable for irrigation with the proposed quantity and quality of effluent.</p> <p>b) The piping used for effluent be markedly different from the piping used for drinking water in respect of colour, type of material and construction. This precaution is necessary in order to obviate accidental cross-coupling of piping.</p> <p>c) In order to prevent persons from unwittingly drinking effluent water or washing with it, the taps, valves and sprayers of the irrigation system must be so designed that only authorised persons can open them or bring them into operation.</p> <p>d) Every water point where uninformed persons could possibly drink effluent water must be provided with a notice in clearly legible English, Afrikaans and any other appropriate official languages, indicating that it is potentially dangerous to drink the water.</p>	<p>e) The expression ‘after effective draining and drying’ in the above-mentioned table means that the particular act may take place only when no pools or drops of effluent are evident in the irrigation area concerned.</p> <p>f) All possible precautions should be taken to ensure that no surface or underground water is contaminated by the irrigation water, especially where the latter does not comply with the General Standard. Excessive irrigation must therefore be avoided and the irrigation area protected against stormwater by means of suitable contours and screening walls.</p> <p>g) Sprinkler irrigation shall be permitted only if <u>no</u> spray is blown over to areas where, such irrigation is forbidden. In this connection the quality of the effluent, the use of such adjoining area and its distance from the irrigation area must be taken into consideration before sprinkler irrigation is permitted.</p>

DIRECTIVES FOR OTHER USES OF TREATED EFFLUENTS					C
OTHER USES OF EFFLUENTS	PS – PRIMARY AND SECONDARY	PST – PRIMARY, SECONDARY AND TERTIARY	STD – GENERAL STANDARD	SP-STD – ADVANCED PURIFICATION	OD – OXIDATION POND SYSTEM
<ul style="list-style-type: none"><li>INDUSTRIAL AND SUNDRY USES NOT MENTIONED BEFORE</li></ul>	<ul style="list-style-type: none"><li>PERMISSIBLE ON MERITS IN EXCEPTIONAL CASES ONLY</li></ul>	<ul style="list-style-type: none"><li>EACH CASE WILL BE TREATED ON ITS MERITS</li><li>THE EMPHASIS WILL BE ON THE <i>E.COLI</i> COUNT</li><li>IN GENERAL THE EFFLUENT MUST BE FREE FROM PARASITIC OVA, PATHOGENIC ORGANISMS, TOXIC SUBSTANCE, ETC.</li></ul>			<ul style="list-style-type: none"><li>PERMISSIBLE ON MERITS IN EXCEPTIONAL CASES ONLY</li></ul>
<ul style="list-style-type: none"><li>FOOD INDUSTRY (ALSO COOLING WATER)</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>
<ul style="list-style-type: none"><li>MINES AND INDUSTRIES: ORE TREATMENT, DUST CONTROL ETC.</li></ul>	<ul style="list-style-type: none"><li>PERMISSIBLE ON MERITS IN EXCEPTIONAL CASES ONLY</li></ul>	<ul style="list-style-type: none"><li>PERMISSIBLE ON MERITS PROVIDED HUMAN CONTACT IS EXCLUDED.</li></ul>	<ul style="list-style-type: none"><li>PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>PERMISSIBLE ON MERITS IN EXCEPTIONAL CASES ONLY</li></ul>
		<ul style="list-style-type: none"><li>ALL TAPS AND WATER DRAW-OFF POINTS IN THE EFFLUENT DISTRIBUTION SYSTEM MUST BE PROVIDE WITH CLEARLY LEGIBLE NOTICES IN ENGLISH, AFRIKAANS AND ANY OTHER APPROPRIATE OFFICIAL LANGUAGES, INDICATING THAT THE WATER IS <u>NOT</u> SUITABLE FOR HUMAN CONSUMPTION.</li></ul>			
<ul style="list-style-type: none"><li>HUMAN WASHING PURPOSES</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>PERMISSIBLE ON MERITS</li><li>CLEARLY LEGIBLE NOTICES MUST BE DISPLAYED INDICATING THAT THE WATER IS <u>NOT</u> FIT FOR HUMAN CONSUMPTION OR FOOD PREPARATION</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>
<ul style="list-style-type: none"><li>FLUSH TOILETS</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>PERMISSIBLE ON MERITS</li><li>IN ORDER TO PREVENT THE USE OF EFFLUENT FOR UNAUTHORISED PURPOSES, NO OTHER DRAW-OFF BIB-COCKS SHALL BE AFFIXED TO EFFLUENT MAINS</li></ul>			<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>

OTHER USES OF EFFLUENTS	PS – PRIMARY AND SECONDARY	PST – PRIMARY, SECONDARY AND TERTIARY	STD – GENERAL STANDARD	SP-STD – ADVANCED PURIFICATION	OD – OXIDATION POND SYSTEM
<ul style="list-style-type: none"><li>DUST CONTROL ON ROADS</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>PERMISSIBLE</li><li>EXCESSIVE SPRAYING AND POOL FORMING MUST BE AVOIDED</li><li>NO SURFACE OR UNDERGROUND WATER MAY BE POLLUTED</li></ul> <ul style="list-style-type: none"><li>NO SMELL NUISANCE MAY BE CREATED</li><li>ANY DIRECT HUMAN CONTACT WITH THE SPRAY MUST BE PREVENTED AS FAR AS IS PRACTICABLE</li><li>STEPS MUST BE TAKEN TO ENSURE THAT NO EFFLUENT IS USED DIRECTLY OR INDIRECTLY FOR DOMESTIC PURPOSES</li><li>CONTAINERS USED FOR THE TRANSPORTATION OF EFFLUENT MUST NOT BE USED THEREAFTER FOR THE TRANSPORTATION OF DRINKING WATER BEFORE THEY HAVE BEEN EFFECTIVELY CLEANED OUT AND DISINFECTED</li></ul>		<ul style="list-style-type: none"><li>PERMISSIBLE</li></ul>	<ul style="list-style-type: none"><li>NOT PERMISSIBLE</li></ul>
GENERAL REMARKS: IT IS COMPULSORY THAT THE NECESSARY PRECAUTIONARY MEASURES BE TAKEN WITH EACH OF THE ABOVE-MENTIONED USES IN ORDER TO PREVENT THE USE OF THE TREATED EFFLUENT FOR DRINKING OR DOMESTIC PURPOSES. IN ADDITION, IT IS ALSO COMPULSORY THAT THE MATERIAL AND/OR THE COLOUR OF THE EFFLUENT PIPELINE BE SUCH AS TO PREVENT ACCIDENTAL CROSS-COUPLING WITH DRINKING WATER PIPELINES. SEE ALSO (b) UNDER THE HEADING “IRRIGATION – GENERAL REMARKS AND PRECAUTIONS ON PAGE 7.					

METHODS OF DISPOSAL AND DISCHARGE OF TREATED EFFLUENTS						D
METHODS OF DISPOSAL AND DISCHARGE OF EFFLUENTS	PS – PRIMARY AND SECONDARY	PST – PRIMARY, SECONDARY AND TERTIARY	STD – GENERAL STANDARD	SP-STD – ADVANCED PURIFICATION	OD – OXIDATION POND SYSTEM	
1) DISCHARGE INTO RIVERS AND WATER COURSES, EXCLUDING ESTUARIES, DAMS AND LAGOONS – SEE 2	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>PERMISSIBLE ON MERITS WITH DUE REGARD TO LOCAL CIRCUMSTANCES SUCH AS THE DILUTION FACTOR IN THE RIVER OR STREAM, RAINFALL ETC.</li> <li>THE PERMISSIBILITY OF DISCHARGE MUST BE DETERMINED WITH DUE REGARD TO THE USE OF THE RIVER WATER DOWNSTREAM</li> <li>THE DISCHARGE POINT MUST BE DETERMINED WITH DUE REGARD TO THE POSITION OF WATER ABSTRACTION POINT(S) FOR DOMESTIC PURPOSES LOWER DOWN THE RIVER</li> <li>THE EFFLUENT MUST CONTAIN NO HARMFUL SUBSTANCES IN CONCENTRATIONS DANGEROUS TO HEALTH</li> </ul>	<ul style="list-style-type: none"> <li>PERMISSIBLE, PROVIDED THE EFFLUENT CONTAINS NO HARMFUL SUBSTANCES IN CONCENTRATIONS DANGEROUS TO HEALTH</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	
2) DISCHARGE INTO ESTUARIES, DAMS, LAKES, LAGOONS OR OTHER MASSES OF WATER (SEA EXCLUDED – SEE 3)	<ul style="list-style-type: none"> <li>NOT PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>PERMISSIBLE ON MERITS IF REASONABLE ASSURANCE EXISTS THAT THE QUALITY AND VOLUME ARE SUCH AS NOT TO CAUSE NUISANCES OR HEALTH HAZARDS</li> <li>ONCE MIXED WITH THE EFFLUENT THE WATER MUST NOT BECOME LESS SUITABLE FOR DOMESTIC USE AND/OR RECREATION</li> <li>THE EFFLUENT MUST CONTAIN NO HARMFUL SUBSTANCES IN CONCENTRATIONS DANGEROUS TO HEALTH</li> </ul>	<ul style="list-style-type: none"> <li>PERMISSIBLE, PROVIDED THE EFFLUENT CONTAINS NO HARMFUL SUBSTANCES IN CONCENTRATIONS DANGEROUS TO HEALTH</li> </ul>	<ul style="list-style-type: none"> <li>PERMISSIBLE</li> </ul>	NOT PERMISSIBLE	



METHODS OF DISPOSAL AND DISCHARGE OF EFFLUENTS	PS – PRIMARY AND SECONDARY	PST – PRIMARY, SECONDARY AND TERTIARY	STD – GENERAL STANDARD	SP-STD – ADVANCED PURIFICATION	OD – OXIDATION POND SYSTEM
3) DISCHARGE INTO THE SEA	<ul style="list-style-type: none"> <li>ONLY PERMISSIBLE BEYOND THE SURF ZONE</li> <li>THE DISCHARGE POINT MUST BE DETERMINED WITH DUE REGARD TO THE QUALITY AND VOLUME OF EFFLUENT, THE SEA CURRENTS, THE DISTRIBUTION AND DILUTION OF EFFLUENT, AND THE PROXIMITY OF PRESENT AND FUTURE BATHING AREAS.</li> </ul>		<ul style="list-style-type: none"> <li>PERMISSIBLE</li> <li>DISCHARGE INTO THE SURF ZONE MUST BE DETERMINED WITH DUE REGARD TO THE PROXIMITY OF PRESENT AND FUTURE BATHING AREAS AND THE EFFECT ON THE QUALITY OF SEAWATER IN SUCH AREA</li> </ul>	<ul style="list-style-type: none"> <li>PERMISSIBLE</li> </ul>	<ul style="list-style-type: none"> <li>PERMISSIBLE ON MERITS AS FOR PS AND PST</li> </ul>
	<ul style="list-style-type: none"> <li>NO COASTAL AREA MAY BE POLLUTED WITH EFFLUENTS CONTAINING SUBSTANCES WHICH ARE POTENTIALLY HARMFUL TO HEALTH</li> <li>THE DISCHARGE OF EFFLUENT MUST NOT CAUSE ANY NUISANCE OR HAVE ANY EFFECT ON MARINE LIFE WHICH MAY ADVERSELY AFFECT MAN DIRECTLY OR INDIRECTLY</li> </ul>				
IN MOST CASES THE INFLUENCE OF THE ABOVE-MENTIONED DISCHARGES IS NOT DIRECTLY PREDICTABLE. IT WOULD THEREFORE USUALLY BE REQUIRED THAT THE NECESSARY INVESTIGATIONS BE MADE TO DETERMINE SUCH INFLUENCE WITH REASONABLE CERTAINTY.					

GENERAL DIRECTIONS AND PRECAUTIONARY MEASURES		E
<p>a) The sewage purification works must be efficiently operated by adequately trained personnel at all times and must, as far as is reasonably practicable, not be overloaded.</p> <p>b) The person or authority in charge of the purification works must satisfy himself that the quality of the final effluent will at all times be in accordance with the directives as set out in this guide.</p> <p>c) Regular control tests of representative final effluent samples must be made at least quarterly and records must be kept of such tests.</p> <p>d) The person or authority in charge of the works must ensure that the quality of the final effluent and the use thereof comply with the directives set out in this guide – also when</p>	<p>such effluent is utilised by another person or body. The supply and utilisation of effluent must be terminated if the directives set out in this guide are not complied with.</p> <p>e) A person or body using the final sewage effluent for a purpose set out in this guide, but not undertaking the purification himself, must satisfy himself that only permissible utilisation practices are maintained and must forthwith discontinue the use thereof should he become aware of any deviation from the directive contained in this guide.</p> <p>f) Compliance with the requirements for the utilisation of purified sewage effluent as set out in this guide is the individual and joint responsibility of both the supplier and the user of the final effluent.</p> <p>g) In the case of a use qualified in this guide as permissible on merit, it will be necessary for the relevant uses and methods of use to be thoroughly motivated and investigated. The majority of such cases, stricter supervision and control of the system as well as the quality of the effluent will be required in order to prevent the development of any nuisance or conditions dangerous to health.</p>	