Rules from Proposed Regional Plan: Sediment Control

Table A Permitted Activities

Type of Activity	Within the Sediment Control Protection Area	Outside the Sediment Control Protection Area
Vegetation Removal		
o On Sand Soils	Area less than 0.25 ha	All vegetation removal
o On all Soils other than Sand Soils	Area less than 0.25 ha	Area less than 10.0 ha
Earthworks		
o On all Soils	Area less tha 0.25 ha	Area less than 1.0 ha where the land has a slope less than 15° Area less than 0.25 ha where the land has a slope equal to or greater than 15°
Roading/Tracking/Trenching		
o On Sand Soils	Length less than 100 o	All roading, tracking and trenching.
o On Soils other than Sand Soils	Length less than 100 o	Area less than 1.0 ha where the land has a slope less than 15° Area less than 0.25 ha where the land has a slope equal to or greater than 15°
Quarries		
o Where no runoff leaves the site and no wash process on site	All quarries	All quarries
o Remainder where runoff leaves the site and/or there are wash processes on site	Quarry area less than 1000 m^2 and/or less than 1.0 ha catchment	Quarry area less than 1000 m^2 and/or less than 1.0 ha catchment

Note

(1) Sediment Control Protection Area is defined as:

a) 100 metres either side of a foredune or 100 metres landward of the coastal marine area (whatever is the more landward of mean high water springs); or

b) 50 metres landward of the edge of a watercourse, or wetland of 1000 m^2 or more.

Table B Controlled Activities

Type of Activity	Outside the Sediment Control Protection Area
Vegetation Removal o On soils other than Sand Soils	Area greater than or equal to 10.0 hectares where the land has a slope less than 15°
Earthworks o On all soils including Sand Soils	Area between 1.0 and 5.0 hectares where the land has a slope less than 15°
Roading/Tracking/Trenching o On Soils other than Sand Soils	Area between 1.0 and 5.0 hectares where the land has a slope less than 15°

Note

(1) Sediment Control Protection Area is defined as:

a) 100 metres either side of a foredune or 100 metres landward of the coastal marine area (whatever is the more landward of mean high water springs); or

b) 50 metres landward of the edge of a watercourse, or wetland of 1000m^2 or more.

Table CRestricted Discretionary Activities

Type of Activity	Within the Sediment Control Protection Area	Outside the Sediment Control Protection Area
Vegetation Removal		
o On sand soils	Area greater than or equal to 0.25 ha	(Refer to Table A – Permitted Activities)
o On all Soils other than Sand Soils	Area greater than or equal to 0.25 ha on land with a slope greater than	Area greater than or equal to 10.0 ha or equal to 15°
Earthworks		
o On all Soils including Sand Soils	Area greater than or equal to 0.25 ha	Area greater than or equal to 5.0 ha on land with a slope less than 15° Area greater than or equal to 0.25 ha on land with a slope greater than or equal to 15°
Roading/Tracking/Trenching		
o On Sand Soils	Length of 100 o or more	(Refer to Table A – Permitted Activities)
o On soils other than sand soils	Length of 100 o or more	Area greater than or equal to 5.0 ha where the land has a slope less than 15° Area greater than or equal to 0.25 ha where the land has a slope greater to or equal to 15°
Quarries		
o Where runoff leaves the site and/or there are wash processes on site	Quarry area of 1000 m^2 or more *and/or* with a catchment of 1.0 ha or more	Quarry area of 1000 m^2 or more and/or with a catchment of 1.0 ha or more

Note

(1) Sediment Control Protection Area is defined as:

a) 100 metres either side of a foredune or 100 metres landward of the coastal marine area (whatever is the more landward of mean high water springs); or

b) 50 metres landward of the edge of a watercourse, or wetland of 1000 m^2 or more.

Land Use Consent: Sediment Control

To: Consent Services
Auckland Regional Council
Private Bag 92012
Auckland
Ph: (09) 379 4420
Fax: (09) 366 2155

For Office Use Only: 12/93
Consent No.:
Fee: $

Pursuant to Section 88 of the Resource Management Act 1991, the undersigned hereby applies for a consent, in accordance with the details below:

(All units should be in metric)

Name of Site: _____ Amount forwarded with this application: $ _____

PART A – APPLICANT DETAILS

1. Applicant Details

a) Full name(s) or company name of applicant(s): _____

b) Postal address: _____

c) Telephone number: Business: _____ Fax number: _____

d) Name of contact person: _____

e) Nature of applicant (tick as appropriate): o Owner o Other (specify) _____

2. Consultant/Agent Details (if applicable)

a) Name: _____

b) Postal Address: _____

c) Telephone number: _____ Fax number: _____

d) Name of contact person: _____

3. Site Engineer (if applicable)

a) Name: _____

b) Postal address: _____

c) Telephone number: _____ Fax number: _____

4. All correspondence relating to this application should be sent to:

Applicant: o Consultant/Agent o Other (give details): _____

5. In which Territorial Authority (TA) is the proposal situated?

o Rodney o North Shore o Auckland o Waitakere

o Manukau o Franklin o Papakura

6. Are there any previous or existing consents already granted related to this proposal?

o Yes o No

If yes, give reference number(s) and description (e.g. Stormwater Discharge Consent Br XXXXX):

TA: _____ Regional Council: _____

7. Are there any further consents required from TA/Regional Council?

o Yes o No

Name of consent authority: _____

Name of Consent Authority: _____

Have these consents been applied for? o Yes o No

If yes, what is the status of these consents? _____

PART B – SITE DETAILS

1. Type of Development

_____

(e.g. quarry, residential subdivision, roadworks, cleanfill, forestry operation, etc)

2. Programme

a) Work commencement date: _____ 19 ____

b) Work completion date: _____ 19 ____

c) Requested expiry date of consent: _____ 19 ____

3. Site Details

a) Total property area (ha): _____

b) Location – address and legal description: _____

_____

(give full legal description, e.g. certificate of title, survey district, lot number – attach certificate of title search)

c) Zoning of area under District Plan: _____

d) Map reference: _____
[Use NZMS 260 (1:50,000), or for urban localities NZMS 271 (1:20,000), eg. R11 672814]

e) Water body into which runoff will be discharged: _____

4. Site Size

a) Total area of bare ground on site (accumulative total through development period): _____

b) Total length of site (roading, trenching, tracking only): _____

c) Volume of proposed earthworks: _____

PART C – OPERATION

1. Management Plan

Please supply an erosion and sediment control plan for the operation. This should be done in conjunction with the required Assessment of Effects (Part D). Details to be included in the erosion and sediment control plan should be appropriate to the scale of operation, but should generally include the following:

- Detailed location map including boundaries, location of stream, roads, etc.
  (Ensure the map includes a scale bar).
- Site description, ie topography, vegetation, soils, etc.
- Details of proposed activity, eg. proposed quarrying, vegetation removal or cleanfill operation.
- Details of plans (with a scale bar) to avoid sediment removal off site (including drawings, specifications and supporting calculations). *(Please provide 2 copies):*
  - erosion control
  - sediment control
  - work programme details (eg. timing, scheduling of works, etc).
- Details of any stream crossing – type of crossing, size, etc, and measures taken to avoid sediment impact.
- Rehabilitation details.

- Details of proposed monitoring measures to assess/demonstrate effectiveness of control measures.
- Details of any other measures designed to reduce impact on the environment.

2. Vegetation Removal

a) Purpose of land clearing operation: _____

b) Area of land in native vegetation: (specify type) _____

Area of land in native scrub: _____

Area of land in other: _____

c) Proposed method (eg. tractor, hauler, crushing, spraying): _____

d) Proposed use or management of the area following operation: _____

3. Earthworks (includes roadworks, etc)

a) Runoff control:
- diversions around site *(attach design details)*
- on-site *(attach details)*

b) Sediment control:

i) Sediment retention ponds. Please complete the table below. Attach details on pond design including spillway and dewatering measures. Show catchment boundaries and pond location on management plan.

Catchment Pond No.	Construction Period (Stage)	Catchment Area (hectares)	Sediment Pond Volume (m^3)

ii) Silt fences *(specify with design details)*

iii) Stormwater inlet protection *(specify with design details)*

iv) Other *(specify with design details)*

Will sediment control measures vary during the project? (eg. roading and stormwater drainage develops).

o Yes o No

If yes, then please provide measures of progressive runoff and sediment control methods proposed.

4. Quarries and Cleanfills

a) Runoff control
- diversion around site *(attach details)*
- on-site *(attach details)*

b) Sediment control
- sediment retention ponds *(as for 3(b)(i))*
- chemical treatment of runoff as appropriate *(attach design details)*

c) Fill/dump sites
- details on stability and compaction of fill and overburden dumps and associated land
- runoff control and drainage
- sediment control and revegetation details

d) Process water
- attach details of operation and discharge

5. Revegetation

Specify with seed/fertiliser mix and timing. Hydrology and mulching also needs to be specified.

PART D – ASSESEMENT OF EFFECTS ON THE ENVIRONMENT

(Reference must be made to Assessment of Environmental Effects Guideline for Land Disturbing Activities)

NB. It is recommended that the applicant consults with the Tangata Whenua prior to submitting an application for a Land Use Consent: Sediment Control.

1. Matters that should be included in an Assessment of Effects on the environment

Subject to the provisions of any policy statement or plan, an assessment of effects on the environment for the purposes of section 88(6)(b) should include:

a) A description of the proposal.

b) Where it is likely that an activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity.

c) An assessment of the actual or potential effect on the environment of the proposed activity.

d) Where the activity includes the use of hazardous substances and installations, an assessment of any risks to the environment which are likely to arise from such use.

e) Where the activity includes the discharge of any contaminant, a description of:

   i) The nature of the discharge and the sensitivity of the proposed receiving environment to adverse effects; and

   ii) Any possible alternative methods of discharge, including discharge into any other receiving environment.

f) A description of the mitigation measures (safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect.

g) An identification of those persons interested in or affected by the proposal, the consultation undertaken, and any response to the views of those outlined.

h) Where the scale or significance of the activity's effect are such that monitoring is required, a description of how, once the proposal is approved, effects will be monitored and by whom.

2. Matters that should be considered when preparing an assessment of effects on the environment

Subject to the provisions of any policy statement or plan, any persons preparing an assessment of the effects on the environment should consider the following matters:

a) Any effect on those in the neighbourhood and, where relevant, the wider community including any socio-economic and cultural effects.

b) Any physical effect on the locality, including any landscape and visual effects.

c) Any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity.

d) Any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural, or other special value for present or future generations.

e) Any discharge of contaminants into the environment, including any unreasonable emission of noise and options for the treatment and disposal of contaminants.

f) Any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations.

PART E - CHECK LIST

Have you remembered to:		Yes
a)	Fully complete this application form	o
b)	Include a location plan (with scale bar)	o
c)	Include design calculations for erosion and sediment control	o
d)	Include an erosion and sediment control plan	o
e)	An Assessment of Environmental Effects (see Guideline)	o
f)	Include written approval from all affected persons	o
g)	Pay the application fee	o

List any other supporting information supplied with this application, eg. archaeological assessments, technical specifications, consultation documents, etc.

_____

_____

_____

_____

_____

_____

Signature of Applicant or Agent: _____ Date: _____

Name (block capitals): _____

Designation: (eg. Owner, Manager, Consultant) _____

Please attach your Deposit Fee payment to this application. Make cheques payable to 'Auckland Regional Council'.

Refer to the deposit fee schedule for details.

Application for Consent to Undertake Works in a Watercourse or Lake

(Section 13 of the Resourse Management Act)

To: Consent Services
Auckland Regional Council
Private Bag 92012
Auckland
Ph: (09) 379 4420
Fax: (09) 366 2155

For Office Use Only:	12/93
Consent No.:	
Fee: $	

Pursuant to Section 88 of the Resource Management Act 1991, the undersigned hereby applies for a consent, in accordance with the details below:

(All units should be in metric)

Name of Site: _____ Amount forwarded with this application: $ _____

PART A – APPLICANT DETAILS

1. Applicant Details

a) Full name(s) or company name of applicant(s): _____

b) Postal address: _____

c) Telephone number: Business: _____ Fax number: _____

d) Name of contact person: _____

e) Nature of applicant (tick as appropriate): o Owner o Other (specify) _____

2. Consultant/Agent Details (if applicable)

a) Name: _____

b) Postal Address: _____

c) Telephone number: _____ Fax number: _____

d) Name of contact person: _____

3. Site Engineer (if applicable)

a) Name: _____

b) Postal address: _____

c) Telephone number: _____ Fax number: _____

4. All correspondence relating to this application should be sent to:

Applicant: o Consultant/Agent o Other (give details): _____

5. In which Territorial Authority (TA) is the proposal situated?

o Rodney o North Shore o Auckland o Waitakere

o Manukau o Franklin o Papakura

6. Are there any previous or existing consents already granted related to this proposal?

o Yes o No

If yes, give reference number(s) and description (e.g. Land Use Consent: Sediment Control Sc11111):

TA: _____ Regional Council: _____

7. Are there any further consents required from TA/Regional Council?

o Yes o No

Name of consent authority: _____

Name of Consent Authority: _____

Have these consents been applied for? o Yes o No

If yes, what is the status of these consents? _____

PART B – SITE DETAILS

1. Type of Development

_____

(e.g. bridge construction, channel lining/works, diversion)

2. Programme

a) Work commencement date: _____ 19 ____

b) Work completion date: _____ 19 ____

c) Requested expiry date of consent: _____ 19 ____

3. Site Details

a) Total property area (ha): _____

b) Location – address and legal description: _____

_____

(give full legal description, e.g. certificate of title, survey district, lot number – attach certificate of title search)

c) Zoning of area under District Plan: _____

d) Map reference: _____
[Use NZMS 260 (1:50,000), or for urban localities NZMS 271 (1:20,000), eg. R11 672814]

e) Water body into which runoff will be discharged: _____

f) Total length of works: _____

g) Will chemicals or toxic substances be used on the site? o Yes o No

If yes, please provide details: _____

4. Name of watercourse or natural water on which the works will take place:

Name: _____ or Tributary of: _____

River Number *(office use only)* | | | | | | |

5. Summary of flow information for works in a watercourse (not required for lakes):

a) Area of catchment contributing to the flow at the site: _____ ha _____

b) i) _____ Calculation of 1% Annual Exceedance Probability (AEP) at the site. If your method of calculation is the Rational formula, complete the following table.

	Area (ha)	Design Runoff Coefficient
Undeveloped: Left in natural state		
Developed: Grassed, cultivated		
Developed, impervious surfaces; roads, carparks, roofed		
Other: Please specify		

ii) Time of concentration at site: _____ mins _____

iii) Design rainfall intensity corresponding to storm of 1% AEP: _____ mm/hr _____

iv) Location of the rainfall station and how the intensity data was derived from its records: _____

_____

v) 1% AEP design flow at site: _____ m^3/s _____

c) If your method of flow calculation is other than the Rational formula:

i) State the method: _____

ii) 1% AEP design discharge: _____ m^3/s _____

iii) Provide details of calculations on a separate sheet

d) _____ Estimate of 1% AEP flood level at site:

_____ RL (o) _____

_____ Provide details of method used for estimated on a separate sheet.

6. Is the work going to be completed in stages?

o Yes o No

7. Supporting information

a) Names and addresses of all property owners/occupiers immediately upstream and downstream of the site, and any other party who may be affected by the proposed works.

b) An accurate plan (drawn to scale and with a scale bar) showing the location of the site, the immediate downstream and upstream properties listed in (a) above, and any other relevant features. Please provide a reduced copy of the plan in A3 size (42cm x 30cm) which we can use to notify affected parties.

c) A full set of plans showing the works. Please provide a reduced copy of the plans in A3 size (42cm x 30cm) which we can use to notify affected parties.

PART C – OPERATION

1. Management Plan

Please supply an erosion and sediment control plan for the operation. This should be done in conjunction with the required Assessment of Effects (Part D). Details to be included in the erosion and sediment control plan should be appropriate to the scale of operation, but should generally include the following:

- Detailed location map including boundaries, location of stream, roads, etc. (Ensure the map includes a scale bar).
- Site description.
- Details of plans (with a scale bar) to avoid sediment removal off site (including drawings, specifications and supporting calculations). *(Please provide 2 copies):*

  - erosion control
  - sediment control
  - work programme details (eg. timing, scheduling of works, etc).

- Rehabilitation details.
- Details of proposed monitoring measures to assess/demonstrate effectiveness of control measures.
- Details of any other measures designed to reduce impact on the environment.

PART D – ASSESEMENT OF EFFECTS ON THE ENVIRONMENT

(Reference must be made to Assessment of Environmental Effects Guideline for Land Disturbing Activities)

NB. It is recommended that the applicant consults with the Tangata Whenua prior to submitting an application for a Land Use Consent: s13.

1. Matters that should be included in an Assessment of Effects on the environment

Subject to the provisions of any policy statement or plan, an assessment of effects on the environment for the purposes of section 88(6)(b) should include:

a) A description of the proposal.

b) Where it is likely that an activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity.

c) An assessment of the actual or potential effect on the environment of the proposed activity.

d) Where the activity includes the use of hazardous substances and installations, an assessment of any risks to the environment which are likely to arise from such use.

e) Where the activity includes the discharge of any contaminant, a description of:
   i) The nature of the discharge and the sensitivity of the proposed receiving environment to adverse effects; and
   ii) Any possible alternative methods of discharge, including discharge into any other receiving environment.

f) A description of the mitigation measures (safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect.

g) An identification of those persons interested in or affected by the proposal, the consultation undertaken, and any response to the views of those outlined.

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b) Any physical effect on the locality, including any landscape and visual effects.

c) Any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity.

d) Any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural, or other special value for present or future generations.

e) Any discharge of contaminants into the environment, including any unreasonable emission of noise and options for the treatment and disposal of contaminants.

f) Any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations.

PART E - CHECK LIST

Have you remembered to:		Yes
a)	Fully complete this application form	o
b)	Include a location plan (with scale bar)	o
c)	Include design calculations for erosion and sediment control	o
d)	Include an erosion and sediment control plan	o
e)	An Assessment of Environmental Effects (see Guideline)	o
f)	Include written approval from all affected persons	o
g)	Pay the application fee	o

List any other supporting information supplied with this application, eg. archaeological assessments, technical specifications, consultation documents, etc.

_____

_____

_____

_____

_____

_____

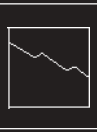
Signature of Applicant or Agent: _____ Date: _____

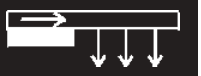
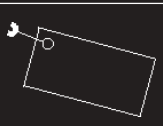
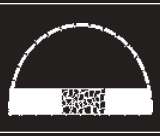
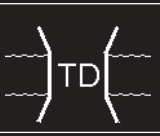
Name (block capitals): _____

Designation: (eg. Owner, Manager, Consultant) _____

Please attach your Deposit Fee payment to this application. Make cheques payable to 'Auckland Regional Council'. Refer to the deposit fee schedule for details.

Standard Symbols for Erosion and Sediment Controls

	**Runoff Diversion Channel/Bund**
	**Contour Drain**
	**Benched Slope**
	**Rock Check Dam**
	**Top Soiling**
	**Temporary Seeding**
	**Permanent Seeding**
	**Hydroseeding**
	**Mulching**
	**Turfing**
	**Geosynthetic Erosion Control Systems**
	**Stabilised Construction Entrance**

	**Pipe Drop Structure/Flume**
	**Level Spreader**
	**Surface Roughening**
	**Sediment Retention Pond**
	**Silt Fence**
	**Super Silt Fence**
	**Hay Bale Barrier**
	**Stormwater Inlet Protection**
	**Earth Bund**
	**Sump/Sediment Pit**
	**Temporary Watercourse Crossing**
	**Temporary Watercourse Diversion**
	**Rock Outlet Protection**

(AEP) Annual Exceedance Probability

A statistical term defining the probability of an event occurring annually. Expressed as a percentage and generally used in hydrology to define rainstorm intensity and frequency. For example, a 5% AEP event has a 5% chance of being exceeded in any one year. This has replaced the return period concept. A 5% AEP event expresses the 20 year return period in more probability terms.

Antiseep Collar

An impermeable barrier, usually of concrete, constructed at intervals within the zone of saturation along the conduit of a primary outlet pipe to increase the seepage length along the conduit and thereby prevent piping or seepage in the compacted fill material along the outside of the pipe.

Area of Disturbance

The area of exposed soil.

Baffles

Semi-permeable or solid barriers placed in a sediment retention pond to deflect or regulate flow and effect a more uniform distribution of velocities, hence creating better settling conditions.

Batter

A constructed slope of uniform gradient.

Berm

Narrow strip beside road.

BPO

Best Practicable Option.

Bulk Earthworks

This term is generally used to describe the cut to fill earthworks required to regrade an area. It also applies to larger scale earthworks such as for building excavations.

Catchment

A geographical unit within which surface runoff is carried under gravity by a single drainage system to a common outlet or outlets. Also commonly referred to as a Watershed or Drainage Basin.

Channel

That part of a watercourse system where normal flow is contained. The channel is generally incised into the flood plain and for many of the stable stream systems in New Zealand can be defined in capacity as being just able to accommodate the annual return period flow (100% AEP) without overtopping.

Also refers to an artificial conduit such as a ditch excavated to convey water.

Channel Stabilisation

Stabilisation of the channel profile by erosion control and/or velocity distribution through reshaping, the use of structural linings, mass blocks, vegetation and other measures.

Channel Storage

The amount of water temporarily stored in channels while *en route* to an outlet.

Clay (Soils)

A mineral soil consisting of particles less than 0.002 mm in equivalent diameter.

A soil texture class.

Clean Water

Any water that has no visual signs of suspended solids, e.g. overland flow (sheet or channelled) originating from stable well-vegetated or armoured surfaces.

Cohesion

The capacity of a soil to resist shearing stress, exclusive of functional resistance.

Cohesive Soil

A soil that, when unconfined, has considerable strength when air-dried and significant cohesion when submerged.

Compaction

For construction work in soils, engineering compaction is any process by which the soil grains are rearranged to decrease void space and bring them into closer contact with one another, thereby increasing the weight of solid material per unit of volume, increasing their shear and bearing strength and reducing permeability.

Concentrated Flow

The accumulation of sheet flow into discrete rills, gullies or channels, significantly increasing erosive forces.

Conduit

Any channel intended for the conveyance of water, whether open or closed.

Construction Staging - The phasing of bulk earthworks to minimise the area of bare earth exposed at any one time.

Contour

A line across a slope connecting points of the same elevation.

Contributing Drainage Area

All of that drainage area that contributes to the flow into a treatment device. A contributing drainage area can include both clean and sediment-laden water flows. Commonly referred to as the catchment area.

Crimping

The embedding of straw mulch into the soil surface by using implements such as a disc cultivator set at zero cut.

Critical 20 Year Return Period Storm

A rainfall event that has a 5% Annual Exceedance Probability and a duration equal to the Time of Concentration.

Cumulative Effect

The combination of discrete isolated effects, the sum of which can have a major long term detrimental impact.

Dam

A barrier to confine or raise water for storage or diversion, to create a hydraulic head, to prevent gully erosion, or to retain soil, rock or other debris.

Decant Rate

The rate at which surface water is decanted from a sediment retention pond.

Deposition

The accumulation of material that has settled because of reduced velocity of the transporting agent (water or wind).

Detention Dam

A dam, constructed for the temporary storage of storm flow, which releases the stored water at controlled rates in order to reduce flooding hazard downstream of the dam.

Dewatering

The removal of impounded water, generally by pumping. Refer Sump Pit.

Di-ammonium phosphate (DAP)

A high percentage nitrogen and phosphate fertiliser suitable for the rapid establishment of grass.

Disturbed Area

An area of exposed soil.

Diversion

A channel or bund constructed to convey concentrated flow.

Drainage

The removal of excess surface water or groundwater from land by means of surface or subsurface drains.

Drainage Basin

Refer Catchment.

Emergency Spillway

A Sediment Retention Pond or Dam spillway designed and constructed to discharge flow in excess of the structure's primary spillway design discharge.

Energy Dissipator

A designed device such as an apron of rip-rap or a concrete structure placed at the end of a water conduit such as a pipe, paved ditch or flume for the purpose of reducing the velocity and energy of the discharged water.

Ephemeral Watercourse

A watercourse that flows only part of the year; includes overland flowpaths such as grassland swales and dry gullies which only flow during more intensive rainstorms.

Erodible

An erodible soil is a soil that is readily entrained (moved) by actions such as rain drop impact, overland flow or wind.

Erosion and Sediment Control Plan (E&SCP)

A detailed Plan normally prepared by the Developer's engineer that details the way erosion is to be minimised and treatment of sediment-laden overland flow is to be undertaken.

Erosion Matting

A manufactured matting of either synthetic or natural fibre used to minimise surface erosion and in some cases, promote revegetation.

Erosive

Refers to the ability of erosional agents such as wind or water to cause erosion. Not to be confused with erodible, as a quality of soil.

Erosive Velocities

Velocities that are high enough to wear away the land surface. Exposed soils erode faster than stabilised soils. Erosive velocities vary according to the soil type, slope, and structural or vegetative stabilisation used to protect the soil.

Estuary

Area where fresh water meets salt water, where the tide meets the river current (eg., bays, mouths of rivers, salt marshes and lagoons). Estuaries serve as nurseries and spawning and feeding grounds for large groups of marine life and provide shelter and food for birds and wildlife. The majority of the estuaries in the Auckland region are low energy systems where sediment readily settles.

Evapotranspiration

The sum of surface evaporation and plant transpiration.

Fill

Earth placed (normally under a strict compaction regime) to raise the land surface.

Filter Blanket

A layer of sand and/or gravel designed to prevent the movement of fine-grained soils.

Filter Fabric

A woven or non-woven, water-permeable geotextile made of synthetic products such as polypropylene used for such purposes as preventing clogging of aggregate by fine soil particles. Refer Geotextile Fabric.

Filter Strip

A long, narrow vegetative planting used to retard or collect sediment for the protection of adjacent properties or receiving environments.

Fines (Soil)

Generally refers to the silt and clay size particles in soil.

Fire Breaks

Specific deforested strips within a forest to act as a barrier in the event of fire.

Flocculation

The process whereby fine particles suspended in the water column clump together and settle. In some instances this can occur naturally, such as when fresh clay-laden flows mix with saline water, as occurs in estuaries. Flocculation can be used to promote rapid settling in sediment retention ponds by the addition of flocculating chemicals (flocculants).

Flume

A high-velocity, open channel for conveying water to a lower level without causing erosion. Also referred to as a chute.

Gabion Basket

A flexible woven-wire basket composed of two to six rectangular cells filled with small stones. Gabions may be assembled into many types of structures such as retaining walls, channel liners, drop structures and groynes.

Geosynthetic Erosion Control Systems (GECS)

The artificial protection of erodible channels and slopes using artificial erosion control material such as geosynthetic matting, geotextiles or erosion matting.

Geotextile Fabric

A woven or non-woven, impermeable or semi-permeable material generally made of synthetic products such as polypropylene and used in a variety of engineering, stormwater management, and erosion and sediment control applications.

Grade

The slope of a road, channel or natural ground.

The finished surface of a channel bed, road bed, top of embankment or bottom of excavation. Any surface prepared for the support of construction like paving or for laying conduit.

To finish the surface of a channel bed, road bed, top of embankment or bottom of excavation.

Gravel

Aggregate consisting of mixed sizes of 5 mm to 75 mm particles which normally occur in or near old streambeds and have been worn smooth by the action of water.

Harvesting Management Plans

A plan detailing how the forest harvest operation is to be conducted to minimise earth disturbance and to maximise the protection of adjoining land and natural features such as watercourses and native vegetation.

Headwater

The source of a watercourse. The water upstream of a structure or point on a watercourse.

Hydrology

The science of the behaviour of water in the atmosphere, on the surface of the earth and underground.

Hydroseeding

The spraying of a slurry of seed, fertiliser and paper or wood pulp over a surface to be revegetated.

Impervious

Not allowing infiltration of water.

Industry Education Programme

An Erosion and Sediment Control training programme run by the ARC for Plan Implementors or Plan Preparers to increase knowledge and ownership of both principles and practices of erosion and sediment control. The programme allows participants to become ARC Registered in erosion and sediment control.

Landings

Forestry. A log production and assembly area.

Level Spreader

A device used to convert concentrated flow into sheet flow.

Mitigation

Measures taken to off-set adverse environmental effects caused by Land Disturbing Activities.

Mulch

Covering on surface of soil to protect it and enhance certain characteristics, such as protection from rain drop impact and improving germination.

Overburden (Quarries)

Unusable soil/rock stripped from above suitable production material.

Overland Flow Path

The route of concentrated flow.

Perennial Stream

A stream that maintains water in its channel throughout the year or maintains a series of discrete pools that provides habitats for the continuation of the aquatic ecosystem.

Permeability (Soil)

The rate at which water will move through a saturated soil.

Permitted Activity

An activity that does not exceed the thresholds specified by a Regional or District Plan whereby a resource consent is required (in the Auckland region, Land Disturbing Activities are controlled by rules specified by the Proposed Regional Plan: Sediment Control (PRPSC)). Permitted Activities must, however, meet certain performance standards in terms of minimising adverse effects.

Pervious

Allowing movement of water.

Poly aluminum Chloride (PAC)

A long chain chemical that is used as a flocculant in certain situations.

Primary Spillway

The Riser inlet within a Sediment Retention Pond.

Quarry Management Plans

A plan detailing how a quarry operation is to be conducted to minimise earth disturbance, to maximise the protection of adjoining land and natural features such as watercourses and native vegetation, and to minimise the effect on adjoining residents and/or landowners.

Rainfall Intensity

The volume of rainfall falling in a given time. Normally expressed as mm/hour.

Rehabilitation

Restoration to as near to pre-disturbance conditions as possible. This may entail such measures as revegetation for erosion control, enhancement planting, modification and armouring of watercourses.

Reno Mattress

A shallow (300-500 mm deep), wide, flexible woven-wire basket composed of two to six rectangular cells filled with small stones. Often used at culvert inlets and outlets to dissipate energy and prevent channel erosion.

Return Period

The statistical interpretation of the frequency of a given intensity and duration rainstorm event. Refer AEP.

Revegetation

The establishment of vegetation to stabilise a site.

Riparian Protection Area

An area adjacent to a watercourse designated as a non-disturbance zone to provide a buffer between receiving environments (eg. watercourses) and the area of operation.

Riser

In a Sediment Retention Pond, a vertically placed pipe to which decant pipes are attached, which forms the inlet to the primary spillway.

Saturation Point

In soils, the point at which a soil or an aquifer will no longer absorb any amount of water without losing an equal amount.

Scarified

Shallow subsurface disturbance with a tine implement to provide surface roughening. Utilised before topsoiling and revegetation.

Scour

The erosive or digging action of flowing water; the downward or lateral erosion caused by water. Channel-forming stream scour is caused by the sweeping away of mud and silt from the outside bank of a curved channel (meander), particularly during a flood.

Sediment

Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below water.

Sediment Control Protection Area

The area 50 o landward of the edge of a watercourse or wetland of 1000 m^2 or more, or 100 o either side of a foredune, or 100 o landward of the coastal marine area (whichever is the more landward of mean high water springs). Inside this area and on hills with slopes greater than 15°, earth disturbance over areas of 0.25 has or greater or 100 o of tracking or trenching requires a resource consent.

Sediment Delivery Ratio

The proportion of the soil eroded from within a catchment area that actually reaches sediment treatment controls or waterbodies.

Sediment Texture

The relative proportions of different sized of sediment and soil particles that can be separated by screening. The size of sediment particulate. Refer Soil Texture.

Sediment Yield

The quantity of sediment discharged from a particular site or catchment in a given time, measured in dry weight or by volume. When erosion and sediment control measures are in place, sediment yield is the sediment discharged from the site after passing through those measures.

Settling

The downward movement of suspended solids through the water column.

Shear Strength

The ability to resist shear (slip) forces.

Sheet flow

Shallow dispersed overland flow.

Shutter Boards

Plywood or similar sheeting supported by light timber framing normally used for boxing concrete forms.

Silt

A soil consisting of particles between 0.05 and 0.002 mm in equivalent diameter. A soil textural class.

Silt Loam

A soil textural class containing a large amount of silt and small quantities of sand and clay.

Silty Clay

A soil textural class containing a relatively large amount of silt and clay and a small amount of sand.

Slash

Branches trimmed from production logs.

Small Site

Small areas of earth disturbance that normally do not require a Land Use Consent: Sediment Control, such as individual residential building sites. Refer Permitted Activities.

Soil

The unconsolidated mineral and organic material on the surface of the earth that serves as a natural medium for the growth of land plants.

Earth and rock particles resulting from the physical and chemical disintegration of rocks, which may or may not contain organic matter. Includes fine material (silts and clays), sand and gravel.

Soil Structure

Soil structure reflects the pore space within a soil available for aeration and storage of water. It is a measure of bulk density and as a rule the higher the soil bulk density the poorer the structure. The combination or arrangement of primary soil particles into secondary particles, units or peds. Good soil structure is important for plant growth.

Soil Texture

The relative proportions of various particle sizes in a soil material. Refer Sediment Texture.

Spreader (Hydraulics)

A device for distributing water uniformly in or from a channel.

Stabilisation

Providing adequate measures, vegetative and/or structural that will protect exposed soil to prevent erosion.

Stabilised Area

An area sufficiently covered by erosion-resistant material such as a good cover of grass, or paving by asphalt, concrete or aggregate, in order to prevent erosion of the underlying soil.

Subsoil

The B horizons of soils with distinct profiles. In soils with weak profile development, the subsoil can be defined as

the soil below the ploughed soil (or its equivalent of surface soil), in which roots normally grow.

Surface Runoff

Rain that runs off rather than being infiltrated or retained by the surface on which it falls.

Surface Water

All water with its surface exposed to the atmosphere.

Suspended Solids

Solids either floating or suspended in water.

Swale

A constructed elongated depression in the land surface that can be seasonally wet, is usually heavily vegetated, and is normally without flowing water. Swales conduct stormwater into primary drainage channels and can provide some groundwater recharge.

Tackifier

A compound that is added to straw mulch to bind it together and prevent it being blown around by the wind.

Temporary Watercourse Crossing

A stable watercourse crossing that is installed for the duration of an operation and is removed in its entirety at the completion of the operation.

Tensile Strength

Resistance to elongation and tearing.

Time of Concentration

The time for runoff to flow from the most remote part of the drainage area to the outlet.

Toe (of Slope)

Where the slope stops or levels out. Bottom of the slope.

Topsoil

Fertile or desirable soil material (suitable organic and structural properties) used to top-dress roadbanks, subsoils, parent material, etc to provide a suitable medium for plant growth.

Unified Soil Classification System (Engineering)

A classification system based on the identification of soils according to their particle size, gradation, plasticity index and liquid limit.

Uniform Flow

A state of steady flow occurring when the mean velocity and cross-sectional area are equal at all sections of a reach.

Universal Soil Loss Equation

An equation used for the design of a water erosion control system:

A = RKLSCP where:

A = the soil loss in tons per ha per annum

R = the rainfall factor

K = the soil erodibility factor

LS = the slope length and gradient factor

C = the vegetation factor

P = the surface roughness factor

Water Body

Any type of surface water such as watercourses, lakes and wetlands.

Watercourse

Any pathway for concentrated overland flow, including rivers, streams and ephemeral channels.

Watershed

Refer Catchment.

Water Table

The upper surface of the free groundwater in a zone of saturation; locus of points in soil water at which hydraulic pressure is equal to atmospheric pressure.

Water Table Drain

A drain that parallels a carriageway to drain surface and subsurface water from the road formation.

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