

Installation of Waterproofing and Protection Geomembranes on Dams executed by CARPI

MAJOR PROJECTS AS OF JANUARY 2006

Type, year of completion and height of dams according to the World Register of Dams

Dam and geomembrane characteristics, in chronological order, according to membrane placing

Name of dam Name of owner	Dam						Geomembrane					
	Country	Altitude meters a.s.l.	Type	Year of Completion	Height [m]	Slope	Installation Completed	Type	Thickness [mm]	Quantity [m ²]	Support	Drainage
Taishir Fuel & Energy Authority of Mongolia	Mongolia	1708	RCC	2007	52	Vertical 1:0.85	2006 2007	PVC	2.5	8500	Geotextile	Geonet
Linach Stadt Vörenbach	Germany	850	MV	1925	29	1:1.2	2006	PVC	2.5	3950	Geotextile	Geonet
Blalock City of Spartanburg	USA	214	RCC	2005 2006	6	Vertical	2005 2006	PVC	2.0	505	Geotextile	-
Covao do Ferro Hidroelectrica da Ribeira da Alforfa SA	Portugal	1578	PG/M	1953	32.5	Vertical	2005	PVC	2.5	6000	2 Geotextiles	-
Karahnjukar Landsvirkjun Iceland Nation Power Company (waterproofing of toe wall)	Iceland	485	CFRD	2005 2006	193	1:1.3	2005	PVC	2.5	2000	Geotextile	-
Kadamparai Tamil Nadu Electricity Board	India	1150.5	PG/M	1989	67.5	Vertical	2005	PVC	2.5	16500	2 Geotextiles	Geotextile
Herbringhauser Wuppertaler Stadtwerke AG	Germany	275	PG	1900	38	Vertical	2004 2005	PVC	2.5	4000	Geotextile	Geonet

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Salt Springs Pacific Gas & Electric Company (PG&E)	USA	1209	CFRD	1931	101	1:1.3	2004 2005	PVC	2.5	18875	Geotextile	Geonet
Burnett River Walters Construction	Australia	50	RCC	2004	35	Vertical	2004 2005	PVC	2.0	19400	Geotextile	-
Toulnustouc Hydro Québec	Canada	310	ER	2004	45	1:1.3	2004	PVC	2.5	270	Geotextile	-
Lago di Mezzo Edison SpA	Italy	1930	PG	1930	31	Vertical	2004	PVC	2.5	2300	Geotextile	Geonet
Midtbotnvatn Sunnhordland Kraftlag AS	Norway	775	CFRD	1991	50	1:1.22	2004	PVC	2.5	8000	Geotextile	-
Eidsvold Main Weir Burnett Water Pty Ltd (3 vertical joints)	Australia	153.6	RCC	2004	15.45	Vertical	2004	PVC	2.5	22 (43 m)	Geocomposite	-
Butgenbach Electrabel SA	Belgium	548	MV	1932	28	1:1	2004	PVC	2.5	4720	Geotextile	Geonet
Lechstaustufe 2 Prem E.ON Wasserkraft GmbH	Germany	748	TE	1971	15	1:1.75	2004	TPO	1.8	17550	Geotextile	-
Olivenhain San Diego County Water Authority (SDCWA)	USA	330	RCC	2003	94.5	Vertical	2003	PVC	2.5	38880	Geotextile	Geonet

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Mujib Jordan Valley Authority	Jordan	200	RCC	2003	67	Vertical	2003	PVC	2.5	9650	Geotextile	-
Beli Iskar Sofiyiska Voda	Bulgaria	1878	PG/M	1946	49.7	Vertical	2002	PVC	2.5	14600	Geotextile	Geotextile
Platanovryssi Public Power Corporation (underwater repair of crack)	Greece	230	RCC	1998	95	Vertical	2002	PVC	2.5	30	Geocomposite	-
Strawberry Pacific Gas & Electric Company (PG&E) (Face joints)	USA	1713	CFRD	1916	43	1:1.2	2002	PVC	2.5	253	Geotextile	-
Miel I Hidromiel	Colombia	454	RCC	2002	192	Vertical	2002	PVC	3.0 2.5	31003	Geotextile	-
Herbringhauser Wuppertaler Stadtwerke AG	Germany	275	PG	1900	38	Vertical	2001	PVC	2.5	20	Geotextile	Geonet
Winscar Yorkshire Water Services	UK	346	ER	1975	52	1:1.7	2001	PVC	2.5	25000	Geotextile	Geonet
Hohenwarte II - Lot 5a VEAG Vereinigete Energiewerke AG	Germany	552	PG	1966	22	Vertical	2001	PVC	2.5	410	Geotextile	Geonet
Hunting Run County of Spotsylvania	USA	78	RCC	2001	30	Vertical	2001	PVC	2.0	8300	Geotextile	-

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Hughes River Natural Resources Conservation Service	USA	232	RCC	2001	30	Vertical	2001	PVC	2.0	4900	Geotextile	-
Dona Francisca DFESA and CEEE (Repair of cracks)	Brazil	102	RCC	2000	50	Vertical	2000	PVC	2.5	150	Geotextile	-
Brändbach Stadt Bräunlingen	Germany	788	PG	1922	14	Vertical	2000	PVC	2.5	1100	Geotextile	Geonet
Hohenwarte II - Lot 4 VEAG Vereinigte Energiewerke AG	Germany	552	PG	1966	22	Vertical	2000	PVC	2.5	400	Geotextile	Geonet
Bouillouse 4 S.N.C.F.	France	2400	PG/M	1910 1947	25	Vertical	2000	PVC	2.5	460	Geotextile	Geonet
Porce II Empresas Publicas de Medellin (Vertical Joints)	Colombia	928	RCC	2000	118	Vertical	2000	PVC	3.5	400	Geotextile	-
Rouchain City of Roanne	France	499	CFRD	1978	60	1:1.4	1999	PVC	2.5	14000	Geotextile	-
La Rive (Rive sur le Ban) City of St. Chamond	France	527	PG/M	1868	48	Vertical	1999	PVC	2.5	3230	Geotextile	Geotextile/Geonet
Moravka Povodi Odry	Czech Rep.	518	TE	1966	39	1:1.75	1999	PVC	2.5	25430	Geotextile	Geonet

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Bouillouse 3 S.N.C.F.	France	2400	PG/M	1910 1947	25	Vertical	1999	PVC	2.5	650	Geotextile	Geonet
Balambano P.T. INCO	Indonesia	167	RCC	1999	99.5	Vertical	1999	PVC	2.5	15490	Geotextile	-
Buckhorn City of Wilson	USA	45	RCC	1998	13	Vertical	1998	PVC	2.0	8100	Geotextile	-
Platanovryssi Public Power Corporation (vertical induced joints)	Greece	230	RCC	1998	95	Vertical	1998	PVC	3.5	345	Geotextile	-
Penn Forest City of Bethlehem	USA	310	RCC	1998	54	Vertical	1998	PVC	2.0	25200	Geotextile	-
Santo Stefano Società Nord Elettrica - SONDEL	Italy	1850	PG	1930	25	Vertical	1998	PVC	2.5	3500	Geotextile	Geonet
La Girotte 3 Electricité de France	France	1754	MV	1948	48	-	1998	PVC	2.5	2430	Geotextile	-
Bouillouse 2 S.N.C.F.	France	2400	PG/M	1910 1947	25	Vertical	1998	PVC	2.5	530	Geotextile	Geonet
Lost Creek South Feather Water and Power (former Oroville-Wyandotte Irrigation District (OWID))	USA	1002	VA	1924	36	Vertical	1997 (Underwater)	PVC	2.5	2800	Geotextile	Geonet

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La Girotte 2 Electricité de France	France	1754	MV	1948	48	-	1997	PVC	2.5	2100	Geotextile	-
Illsee Illsee Turtmann AG	Switzerland	2320	PG/M	1924 1943	25	Vertical	1996 1997	PVC	2.5	3620	Geotextile	Geotextile/Geonet
Bouillouse 1 S.N.C.F	France	2400	PG/M	1910 1947	25	Vertical	1996	PVC	2.5	170	Geotextile	Geonet
Fully Energie de l'Ouest-Suisse (EOS)	Switzerland	2150	PG/M	1914	11	Vertical	1996	PVC	2.5	830	Geotextile	Geonet
Bovilla Albinfrastuktura	Albania	320	TE	1995 1996	91	1:1.6	1995 1996	PVC	3.0	9138	Geotextile	-
Vale do Rossim CENEL- Electricidade do Centro SA (repair of crack)	Portugal		PG	1956	27	Vertical	1995	PVC	2.5	200	Geotextile	-
Nacaome Servicio Autonomo Nacional De Acueductos y Alcantarillados	Honduras	136	RCC	1994 1995	55	Vertical	1994 1995	PVC	2.5	10440	Geotextile	-
Scais Società Nord Elettrica - SONDEL	Italy	1495	CB	1939	65	Vertical	1993 1995	PVC	2.5	14461	Geotextile	Geonet
La Girotte 1 Electricité de France	France	1754	MV	1948	48	-	1994	PVC	2.5	840	Geotextile	-

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Larecchio Società Italiana Siderurgia Meccanica e Affini	Italy	1850	PG	1938	33	Vertical	1993 1994	PVC	2.0	3600	Geotextile	Geonet
Alpe Gera Ente Nazionale Energia Elettrica	Italy	2128	PG	1964	174	Vertical	1993 1994	PVC	2.0	11400	Geotextile	-
Chambon Electricité de France	France	1042	PG	1934	136	Vertical	1991 1994	PVC	2.5	6700	Geotextile	Geonet
Chartrain Ville de Roanne	France	491	PG/M	1892	54	Vertical	1993	PVC	2.5	6000	Geotextile	Geotextile/Geonet
Campo Secco Ente Nazionale Energia Elettrica	Italy	2337	PG/M	1930	27	Vertical	1993	PVC	2.5	4800	Geotextile	Geotextile
Pracana Electricidade de Portugal	Portugal	115	CB	1951	65	Vertical	1992	PVC	2.5	8000	Geotextile	Geonet
Sa Forada Ente Autonomo del Flumendosa	Italy	191	TE	1962	30	1:1	1992	PVC	2.5	9498	Geotextile	Geonet
Ceresole Reale Azienda Energetica Municipa- lizzata di Torino	Italy	1574	PG/L	1930	57	Vertical	1992	PVC	2.5	9000	Geotextile	-
Concepcion Servicio Autonomo Nacional de Acueductos y Alcantarillados	Honduras	1160	RCC	1990	70	Vertical	1991	PVC	2.5	15644	Geotextile	-

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Le Riou Electricité de France	France	670	RCC	1990	20	Vertical	1990	PVC	2.5	4200	Geotextile	-
Pian Sapejo Ente Nazionale Energia Elettrica	Italy	965	MV	1926	16	-	1990	PVC	2.5	2700	Geotextile	Geonet
Migoelou Electricité de France	France	2280	MV	1958	29	-	1989	PVC	2.5	483	Geotextile	Geonet
Publino Società Nord Elettrica - SONDEL	Italy	2135	VA	1951	40	Vertical	1989	PVC	2.5	5450	Geotextile	Geonet
Alento Consorzio Velia per la bonifica del Bacino dell'Alento	Italy	87	ER	1988	21	1:2.5	1988	PVC	1.5	16500	Geotextile	-
Crueize Electricité de France	France	1076	ER	1950	5	1/1	1988	PVC	2.0	450	Geotextile	Geonet
Cignana Ente Nazionale Energia Elettrica	Italy	2158	PG	1928	58	Vertical	1988	PVC	2.5	8135	Geotextile	-
Piano Barbellino Ente Nazionale Energia Elettrica	Italy	1873	PG	1931	66	Vertical	1987	PVC	2.0	6002	Geotextile	-
Molato Impianti Idroelettrici della Val Tidone	Italy	400	MV	1928	55	-	1986	PVC	3.0	1000	Geotextile	-

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Lago Nero Ente Nazionale Energia Elettrica	Italy	2031	PG	1928	43	Vertical	1980	PVC	2.0	4000	Geotextile	-
Gorghiglio Ente Nazionale Energia Elettrica	Italy	600	ER	1942	12	1:1	1979	PVC	2.0	35000	Geotextile	-
Lago Miller Ente Nazionale Energia Elettrica	Italy	2170	PG/M	1926	11	Vertical	1976	PVC	2.0	1500	-	-
Poma Ente Sviluppo Agricolo	Italy	195	TE	1968	56	1:2	1974	PVC-PIB	1 + 2	1800	-	-
Pantano d'Avio Ente Nazionale Energia Elettrica	Italy	1900	CB	1956	65	1:0.5	1974	PIB	2.0	1200	-	-
Lago Baitone Ente Nazionale Energia Elettrica	Italy	2281	PG/L	1930	37	Vertical	1970	PIB	2.0	3500	-	-
Lago Verde 2 Ente Nazionale Energia Elettrica	Italy	2531	ER	1970	53	1:2	1970	PVC-PIB	-	3600	-	-

TE	Earth	CB	Buttress	PVC	Polyvinylchloride
ER	Rockfill	VA	Arch	TPO	Flexible Polypropylene
PG	Gravity	MV	Multi-arch	PIB	Polyisobutylene
PG/M	Gravity/Masonry facing	RCC	Roller compacted concrete		
PG/L	Gravity/Levy facing				
CFRD	Concrete faced rockfill dam				