



PUBLIC UTILITY DISTRICT NO. 1 *of* CHELAN COUNTY

P.O. Box 1231, Wenatchee, WA 98807-1231 • 327 N. Wenatchee Ave., Wenatchee, WA 98801
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August 14, 2009

P-637-WA

NATDAM-WA00004

Mr. Patrick Regan, P.E., Regional Engineer
Portland Regional Office
Federal Energy Regulatory Commission
805 SW Broadway, Suite 550
Portland, OR 97205

Re: Chelan River Project Monthly Report

Dear Mr. Regan:

In accordance with your letter of June 19, 2008, enclosed herewith are an original and two copies of the thirteenth monthly report for the Chelan River Project. In addition, copies of this letter and the report will be sent to Mr. Jon Merz and Ms. Pat Irle of Washington Department of Ecology.

If you would like to discuss this work or if additional information would be helpful, please call me at the number listed below, or call Michelle Smith, Licensing & Compliance Manager, at (509) 661-4180.

Sincerely,
Engineering Services

M. Gene Yow, P.E.
Dam Safety Manager
(509) 661-4305
gene.yow@chelanpud.org

Enclosures: Original and two copies

cc: Jon Merz, WaDOE
Pat Irle, WaDOE

Chelan River Project – Monthly Report
Lake Chelan Hydroelectric Project – FERC No. 637
Public Utility District No. 1 of Chelan County

August 15th, 2009

1. Progress of Work

The work is on schedule and in conformance with the plans, specifications, and permits. No environmental incidents have occurred. No safety incidents have occurred.

Work on the new habitat channel, pump station, and conveyance canal (including the outlet structure), is actively progressing. The hydraulic control structure (boulder weir) was completed on schedule. The habitat channel is complete except for plantings. The pump station is complete, except for start-up and testing.

Work at Lake Chelan Dam for the Low Level Outlet is ongoing. The outlet structure is complete. LLO piping installation is complete. Electrical work is complete. Start-up and testing remain.

Progress on the site includes:

- The hydraulic control structure is complete.
- Reach 4 spill channel is complete.
- The conveyance canal is 98% complete. Remaining work includes installation of the afterbay drain valve and finishing the low-flow channel.
- Conveyance canal outlet structure is complete.
- All of the boulders are now in place in Reach 4.
- Pump station concrete placements are complete.
- The pump tubes have been set and the supports grouted into the drilled pier casings.
- Electrical work at the pump station is complete. Pumps have been installed.
- Air burst piping is complete.
- The two pump station transformers are set and powered up.
- Habitat channel is complete.

2. Status of Construction

The lower tailrace habitat work began July 1, 2008, on schedule, and is complete.

Canal outlet structure concrete construction is complete, on schedule, and slide gates and diffusion gratings are in place. Installation of miscellaneous metals (e.g. walkway grating) is complete.

Pump station work is complete, on schedule. The control buildings are set, transformers are set, and conductor installation is complete. The retaining wall handrail has been installed as well as the junction boxes. The 42" diameter discharge pipes have been installed, and the afterbay concrete is complete.

Civil and mechanical work at the Low Level Outlet is complete. The 60" gate valves and sluice gates have been set and are ready for testing.

The 84" LLO piping placement is complete. The 60" piping has been installed. Concrete placement for the bulkhead is complete.

All remaining phases of the work are expected to start on schedule.

See project milestone schedule which follows.

Activity Name	Original Duration	Start	Finish	Duration % Complete
LC07b Chelan River Project	988	11-Dec-06 A	01-Oct-10	70.89%
Planning	698	28-Feb-07 A	30-Nov-09	89.26%
Permitting	498	07-Sep-07 A	18-Aug-09 A	100%
Chelan River Projects	400	01-May-08 A	30-Nov-09	81.25%
Max Spill 6000 cfs (contractual)	59	01-May-08 A	25-Jul-08 A	100%
GBI In-Water Work, Actual Dates	44	01-Jul-08 A	03-Sep-08 A	100%
In-water Work Window 2008	61	01-Jul-08 A	26-Sep-08 A	100%
Max Spill 100 cfs (contractual)	43	28-Jul-08 A	26-Sep-08 A	100%
Max Spill 6000 cfs (contractual)	185	01-Nov-08 A	26-Oct-09	71.89%
Chinook Spawning Pumping Plant 320cfs, 10/15-11/30	31	15-Oct-09*	30-Nov-09	0%
Modernization	17	07-Apr-08 A	29-Apr-08 A	100%
Lake Level Requirements	134	01-May-08 A	01-Oct-08 A	100%
Design	108	28-Sep-07 A	04-Mar-08 A	100%
Procurement	565	28-Feb-07 A	05-Jun-09 A	100%
08-01 Construction Procurement	112	26-Nov-07 A	05-May-08 A	100%
07-31 Pump Station Equipment	565	28-Feb-07 A	05-Jun-09 A	100%
Tree Relo & Boulder Process (Mostly 08-SW04)	89	20-Mar-08 A	18-Jul-08 A	100%
Entrance Road Modifications	133	05-Mar-08 A	14-Aug-08 A	100%
Execution (Construction of 08-01)	774	11-Dec-06 A	27-Nov-09	90.44%
Pre-Construction Activities	51	12-May-08 A	02-Jun-08 A	100%
Pump Station Construction	710	11-Dec-06 A	26-Aug-09	98.59%
Intake site excavation	2	09-Jun-08 A	11-Jun-08 A	100%
Outlet Structure Excavation	4	23-Jun-08 A	27-Jun-08 A	100%
Power Feed and Powerline Relocate	405	11-Dec-06 A	13-Jun-08 A	100%
Intake Structure	230	12-Jun-08 A	06-Jun-09 A	100%
Conveyance Canal & Outlet Structure	294	19-Jun-08 A	26-Aug-09	96.6%
Earthwork (Excav., Compact Embank., Trim)	29	19-Jun-08 A	31-Jul-08 A	100%
Outlet Structure Concrete	88	07-Jul-08 A	07-Nov-08 A	100%
Install Canal Liner (85%)	4	11-Aug-08 A	15-Aug-08 A	100%
Shotcrete Lining (85%)	4	12-Aug-08 A	18-Aug-08 A	100%
Excavate & Grade remainder of canal (both ends)	4	30-Mar-09 A	03-Apr-09 A	100%
Install Canal Liner (remainder, at both ends)	2	02-Apr-09 A	03-Apr-09 A	100%
Shotcrete Lining (remainder, at both ends)	2	13-Apr-09 A	14-Apr-09 A	100%
Low Flow Channel Concrete	10	13-Aug-09*	26-Aug-09	0%
Mechanical Piping and Equipment	118	28-Jan-09 A	17-Jun-09 A	100%
Electrical Installation	164	05-Dec-08 A	30-Jul-09 A	100%
Reach 4 Construction	353	02-Jun-08 A	27-Nov-09	91.74%
Remove Bridge	3	04-Jun-09 A	06-Jun-09 A	100%
Spawning & Spill Constraints	74	25-Jul-08 A	01-Nov-08 A	100%
Tailrace Construction	333	04-Jun-08 A	30-Sep-08 A	100%
Reach 4 Construction	358	02-Jun-08 A	27-Nov-09	91.62%
Site Survey and stake	9	02-Jun-08 A	13-Jun-08 A	100%
Shape Habitat Stream	152	30-Jun-08 A	23-Feb-09 A	100%
Retrieve Lone Pine Boulders	15	19-Sep-08 A	02-Oct-08 A	100%
Fish mix in riverbed area	30	01-Oct-08 A	21-Nov-08 A	100%
Retrieve Boulders from Dovex canyon site	3	07-Oct-08 A	09-Oct-08 A	100%

Activity Name	Original Duration	Start	Finish	Duration % Complete
Retrieve Boulders from DOT site	5	10-Oct-08 A	17-Oct-08 A	100%
Hydraulic Control Structure	60	13-Oct-08 A	14-Nov-08 A	100%
Log Jams & Boulder Clusters	60	13-Oct-08 A	23-Feb-09 A	100%
Retrieve Boulders from Dovex apple bin site	3	20-Oct-08 A	24-Oct-08 A	100%
Place Grout in Hydraulic Control Structure	10	27-Oct-08 A	14-Nov-08 A	100%
Field burning of wood slash piles	2	07-Jan-09 A	09-Jan-09 A	100%
HABITAT STREAM FUNCTIONAL	22	08-May-09 A	08-Jun-09 A	100%
Remove Haul Road	1	05-Jun-09 A	05-Jun-09 A	100%
Plantings Schedule (Dormancy Period Oct-Nov)	30	15-Oct-09*	27-Nov-09	0%
Low Level Outlet Construction	501	01-Oct-07 A	21-Sep-09	99.8%
Fabricate and Install Trashracks/Frames	186	01-Oct-07 A	30-May-08 A	100%
Relocate 480V Line	36	19-Feb-08 A	09-Apr-08 A	100%
Civil / Structural Construction	301	16-Jun-08 A	21-Sep-09	99.67%
Primary Submittals	59	25-Jun-08 A	21-Oct-08 A	100%
Material & Equipment Delivery	145	21-Jan-09 A	23-Jul-09 A	100%
Tap Outlet at Dam	235	16-Jun-08 A	07-Jul-09 A	100%
Complete Tunnel Stub	113	16-Mar-09 A	21-Sep-09	99.12%
Install 18" sump, and 8" drain line	5	16-Mar-09 A	31-Mar-09 A	100%
Install Tunnel Stub Platforms & Ladders	5	22-Jun-09 A	24-Jun-09 A	100%
Replace Sheet Pile	2	24-Jun-09 A	01-Jul-09 A	100%
Install Temperature Probe	1	05-Aug-09 A	05-Aug-09 A	100%
Install Flow Meter	1	21-Sep-09*	21-Sep-09	0%
Construct Outlet	167	05-Dec-08 A	05-Aug-09 A	100%
Revegetated Areas	257	28-Sep-09	01-Oct-10	0%
Closeout	29	24-Aug-09	02-Oct-09	0%
Testing	23	24-Aug-09	24-Sep-09	0%
Component Testing (by Contractor)	4	24-Aug-09*	27-Aug-09	0%
Inspection & Test Plan	5	28-Aug-09	03-Sep-09	0%
Pump Station Commissioning	3	14-Sep-09*	16-Sep-09	0%
Pump Station Acceptance Testing	5	17-Sep-09	23-Sep-09	0%
Program and Test Controls @ LLO	2	21-Sep-09*	22-Sep-09	0%
Calibrate Flow Meter @ LLO	2	23-Sep-09	24-Sep-09	0%
Project Turnover	2	24-Sep-09	28-Sep-09	0%
SYSTEMS FUNCTIONAL	0		24-Sep-09	0%
Acceptance by Client	1	25-Sep-09	25-Sep-09	0%
Client Satisfaction Survey Completed	1	25-Sep-09	25-Sep-09	0%
Obtain As-builts from Contractor	1	25-Sep-09	25-Sep-09	0%
408-7b3-301 As-builts to FERC & Client (Copy M. Salgado)	1	28-Sep-09	28-Sep-09	0%
Settlement Article 7b complete	0		28-Sep-09	0%
Closeout	5	28-Sep-09	02-Oct-09	0%
Final Acceptance	1	28-Sep-09	28-Sep-09	0%
Reconciliation of Project (Summary Report)	4	29-Sep-09	02-Oct-09	0%
Internal Notification of Project Completion	0		02-Oct-09	0%

3. **Construction Difficulties**

No unusual/extraordinary difficulties have been encountered thus far on the project.

4. **Contract Status**

Goodfellow Brothers, Inc. (GBI) of Wenatchee, WA, is the general contractor and is performing the majority of the work themselves. Subcontracted work includes:

Malcolm Drilling of Kent, WA, a specialty foundation contractor, installed the foundation piers to support the pump tubes and pumps.

Sharples Construction of Kent, WA built the concrete outlet structure for the conveyance canal. They also constructed the retaining wall for the pump station, including the footing slab and grade beams.

McCandlish Electric, Wenatchee, WA is performing the electrical work.

Harbor Offshore, Ventura, CA, performed the diving work for installation of the tee screens and pump tubes.

Lampson International, Kennewick, WA, supplied the cranes and riggers for installation of the pump tube assemblies.

DDJ Construction Welding, Inc., Enumclaw, WA, performed the demolition work on the sheet pile wall and bulkhead at the 17-foot penstock at Chelan Dam. They are also welding the pipe sections of the LLO piping.

The work is on schedule, and is anticipated to remain on schedule through completion of the work.

5. **Critical Events and Dates**

2008

- May 5 Notice to Proceed
- May 12 Begin Mobilization
- May 27 Begin work on site
- June 5 Set temporary bridge across Reach 4 spill channel
- June 5 Lake Chelan spill begins
- July 1 In-water construction work window begins
- July 15 Delivery of pump station pumps
- August 7 Delivery of T-Screens

- September 2 Delivery of pump tubes
- September 5 Completion of Tailrace Habitat construction
- November 17 Completion of Hydraulic Control Structure
- December 5 Begin work at Chelan Dam for the Low Level Outlet
- December 12 Completion of Canal Outlet Structure Concrete

2009

- January 29 Completed setting pump tubes and grouting
- March 9 Begin tunnel stub work at Chelan Dam
- March 11 Set the two power transformers for the pump buildings
- March 17 Set the control buildings upon their foundations
- March 25 Set the 42" diameter discharge pipes at the pump station
- April 30 Powered up the transformers and control buildings
- May 1 Installed the 60" gate valves and sluice gates at the LLO
- May 28 Final inspection of LLO wet tunnel and piping
- June 2 Bump tested the pump station pumps
- June 3 Completed concrete placements for the afterbay
- June 3 Verified operation of outlet structure slide gates
- June 7 Removed temporary bridge across Reach 4 spill channel
- June 8 Installed sluice gate actuators at LLO
- June 8 Lake Chelan spill begins

6. Reservoir Filling

N/A

7. Foundations

Drilling for pump station foundation piers did not encounter bedrock in any of the pier locations. This possibility was anticipated in the design so that an appropriate length for piers not reaching bedrock was calculated and shown on the design drawings. This length was used, as planned.

The foundation excavation for the conveyance canal outlet structure has been completed. The foundation material consists of alluvial boulders and cobbles in a matrix of gravel and sand. These are the conditions anticipated by the design.

The foundation excavation for the low level outlet has been completed. The foundation material consists of alluvial sand and gravel, with some cobbles and boulders. These are the conditions anticipated by the design.

8. Sources of Major Construction Materials

Material for “fish mix” and “riffle mix”, two gradations of gravel used to construct the fish habitat, was obtained from on-site sources. See drawing 0330-50GA-0028 (sheet R1) in the bid documents for borrow area locations. The material was regularly tested, inspected, and met the contract specifications.

Boulders were obtained from both on-site and off-site sources. The boulders are generally from alluvial sources along the Columbia River Valley.

The required Large Woody Debris (LWD) was delivered to the job site from various sources along the Columbia River Valley. The LWD includes 154 poplar trees for racking, 65 root balls, 85 conifer key logs, and approximately 100 conifer racking logs.

The concrete supplier is Chelan Concrete. The cement supplier is Lehigh Cement.

Gates and valves for the Low-Level Outlet are from J&S Valve and HydroGate. The equipment is on-site and installed.

Pumping equipment and controls are being provided under separate contract by ITT Flygt, Inc. The pumps and major components have been delivered to the job site, on schedule.

9. Materials Testing and Results

Structural concrete has been placed and tested, and structural fill material for which density tests are required has been placed. Test results meet the contract specifications. Canal shotcrete lining has been placed, and tested to verify conformance with the contract specifications. No exceptions have been noted.

A sampling of concrete strength tests are provided below, as requested by the FERC’s Mr. Adan Archuleta. The reports are attached following heading 13.

Reports and the related structure are as follows:

- Pump station foundations: W-3378 and W-3368
- Pump tube drilled piers: W-3035 and W-3043
- Pump station afterbay: W-3574 and W-3580
- Conveyance canal shotcrete: W-3156 and W-3157
- Canal outlet structure: W-3206 and W-3263
- Hydraulic control structure: W-3374
- Low level outlet structure: W-3468 and W-3490
- Low level outlet pipe bulkhead: W-3536 and W-3559

10. Instrumentation

Instruments that have been installed so far include the following:

- Temperature sensor at Pump No. 1, TT-141, at the northern-most pump, near the T-screen
- Differential pressure bubbler line, ¼-inch copper line, sensing point is the bottom elevation of the T-screen for pump No. 3.
- Level switch LSH-151 has been installed in the main transformer's vault
- Level switch LSH-152 has been installed in the auxiliary transformer's vault
- Temperature sensor at the pumped water outlet structure, TT-142
- Level sensors LS-131-1 and LS-131-2 have been installed at the pumped water outlet structure, on either side of the northern-most slide gate.
- The pumped water conveyance canal velocity meter (Doppler unit) has been installed.
- The temperature probe at the start of the low level outlet piping has been installed.
- The flow meter at the start of the low level outlet piping has NOT yet been installed.

11. Photographs

There are no completed features of the project that we have not previously provided pictures. Therefore, none are included in this month's report.

12. Erosion Control and Other Environmental Measures

All work has been performed in accordance with the project's approved Water Quality Protection Plan and Erosion & Sediment Control Plan. This includes placement of silt fences and sediment curtains, and deployment of an oil boom. Washington Department of Ecology staff has visited the project site on several occasions. No water quality violations have occurred.

A sediment curtain was installed in the powerhouse tailrace channel around the temporary earth berm at the pump station, prior to placement of the berm. The sediment curtain, along with an oil boom, remained in place during drilling for pier installation. The steps taken have been effective at limiting sedimentation to permitted levels. The equipment has been removed since the temporary earth berm used for concrete pier construction staging has been removed.

The oil boom that was installed downstream of the confluence of the Chelan powerhouse tailrace channel and the new channel, has been removed. Work is

underway above elevation 710 in the habitat channel, and surface water is protected by a temporary berm which separates work from nearby water.

13. Other Items of Interest

Spill from Lake Chelan, to control the lake level, began on June 8th, 2009 with a flow of 240 cfs. Spill was increased, and discharged at rates up to 5000 cfs. Spill was terminated on August 1st, 2009. There is a chance for additional spill to maintain lake elevation, due to environmental uncertainties.

Commissioning of the pump station is scheduled to begin September 14th, 2009. Commissioning of the low level outlet is scheduled to begin September 21st, 2009.

No injuries or safety incidents have occurred.

HAMMOND COLLIER WADE LIVINGSTONE
ENGINEERING - SURVEYING - TESTING - INSPECTION

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	CCPUD	LAB NO.:	W-3378
PROJECT NO:	07-30-093	TESTED BY:	RG
PROJECT:	Chelan Falls	CAST BY:	A Hill
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	60 FIELD TEMP. MIN.
CONTRACTOR:	Goodfellow Brothers	AIR TEMP:	43 FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	10/28/2008	11/4/2008	7	28.83	12.00	6.00	28.27	146.8	140025	4952		Type 4
2	10/28/2008	11/25/2008	28	28.69	11.98	6.00	28.27	146.4	180145	6371		Type 1
3	10/28/2008	11/25/2008	28	28.92	12.00	6.00	28.27	147.3	182180	6443		Type 1

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	7.5	UNIT WT, ASTM C-138:		LOCATION: Pump Sta. Footing at 50 yards			
PCT. AIR, ASTM C-231:	4.0%	CEMENT:	4000 Psi				
W/C RATIO:		ADDITIVES:	MBAE90, MB200N 30/30 NS	Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.		Reviewed By: J.HILLS	

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	CCPUD	LAB NO.:	W-3368		
PROJECT NO:	07-30-093	TESTED BY:	RG		
PROJECT:	Chelan Falls	CAST BY:	AJ		
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	57	FIELD TEMP. MIN.	
CONTRACTOR:	Goodfellows	AIR TEMP:	41	FIELD TEMP. MAX.	

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	10/23/2008	10/30/2008	7	28.17	11.98	6.00	28.27	143.7	131625	4655		Type 4
2	10/23/2008	11/20/2008	28	28.35	12.00	6.00	28.27	144.4	151585	5361		Type 4
3	10/23/2008	11/20/2008	28	28.20	12.00	6.00	28.27	143.6	163445	5781		Type 1
4	10/23/2008	10/30/2008	7	29.20	12.00	6.00	28.27	148.7	137140	4850		Type 4
5	10/23/2008	11/20/2008	28	29.35	12.00	6.00	28.27	149.5	180650	6389		Type 1
6	10/23/2008	11/20/2008	28	29.37	12.00	6.00	28.27	149.6	181260	6411		Type 1

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	5"	UNIT WT, ASTM C-138:		LOCATION:	10 yards		
PCT. AIR, ASTM C-231:	7.8%	CEMENT:	4000#				
W/C RATIO:		ADDITIVES:	Super P	Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.	Reviewed By:	J.HILLS	

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT: <u>Goodfellow Brothers</u>	LAB NO.: <u>W-3035</u>
PROJECT NO: <u>07-30-026</u>	TESTED BY: <u>JH & RG</u>
PROJECT: <u>Misc. Testing</u>	CAST BY: <u>A. Hill</u>
SUPPLIER: <u>Chelan Concrete</u>	MIX TEMP, ASTM C-1064: <u>90</u> FIELD TEMP. MIN. _____
CONTRACTOR: <u>Client</u>	AIR TEMP: <u>87</u> FIELD TEMP. MAX. _____

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT. "	CYL. DIA. "	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	7/17/2008	7/24/2008	7	29.81	12.00	6.00	28.27	151.8	194945	6895		Type 1
2	7/17/2008	7/24/2008	7	29.82	12.02	6.00	28.27	151.6	195070	6899		Type 4
3	7/17/2008	8/14/2008	28	29.85	12.02	6.00	28.27	151.8	235730	8337		Type 4
4	7/17/2008	8/14/2008	28	29.78	12.00	6.00	28.27	151.7	239300	8464		Type 1
5	7/17/2008	8/14/2008	28	29.75	12.02	6.00	28.27	151.3	234935	8309		Type 4
6	7/17/2008	8/14/2008	28	29.81	12.05	6.00	28.27	151.2	243810	8623		Type 4

CYLINDER DATA	GENERAL INFORMATION
SLUMP, ASTM C-143: _____ UNIT WT, ASTM C-138: _____	LOCATION: <u>Pier Column #2</u>
PCT. AIR, ASTM C-231: _____ CEMENT: <u>Drilled Shaft Mix #2</u>	
W/C RATIO: _____ ADDITIVES: _____	Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.
	Reviewed By: <u>J.HILLS</u>

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	Goodfellow Brothers	LAB NO.:	W-3043	
PROJECT NO:	07-30-026	TESTED BY:	RG	
PROJECT:	Misc. Testing	CAST BY:	A. Hill	
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	87	FIELD TEMP. MIN.
CONTRACTOR:	Client	AIR TEMP:	86	FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	7/18/2008	7/25/2008	7	29.09	12.00	6.00	28.27	148.2	167795	5935		Type 1
2	7/18/2008	7/25/2008	7	29.12	12.02	6.00	28.27	148.1	164115	5804		Type 1
3	7/18/2008	8/15/2008	28	29.17	12.02	6.00	28.27	148.3	196760	6959		Type 1

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	8.5	UNIT WT, ASTM C-138:		LOCATION: Drilled Holes 1,4			
PCT. AIR, ASTM C-231:	NA	CEMENT:	MB 200 30/30 NS	Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.			
W/C RATIO:		ADDITIVES:	Rheomac UW 450				

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	CCPUD	LAB NO.:	W-3574	
PROJECT NO:	09-30-005	TESTED BY:	RG	
PROJECT:	Chelan Dam	CAST BY:	A. Hill	
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	76	FIELD TEMP. MIN.
CONTRACTOR:	Client	AIR TEMP:	80	FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	6/1/2009	6/8/2009	7	29.51	12.02	6.02	28.46	149.0	114195	4012		Type 4
2	6/1/2009	6/29/2009	28	29.53	12.05	6.02	28.46	148.8	138445	4864	4000	Type 1
3	6/1/2009	6/29/2009	28	29.57	12.02	6.02	28.46	149.4	132135	4642	4000	Type 4

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	1.75	UNIT WT, ASTM C-138:		LOCATION:	After bay canal sectio @ 40 yards		
PCT. AIR, ASTM C-231:	3.8%	CEMENT:	6 Sack 4000 PSI				
W/C RATIO:		ADDITIVES:		Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.	Reviewed By:	J.HILLS	

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	CCPUD	LAB NO.:	W-3580	
PROJECT NO:	09-30-005	TESTED BY:	RG	
PROJECT:	Chelan Dam	CAST BY:	AH	
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	70	FIELD TEMP. MIN.
CONTRACTOR:	Client	AIR TEMP:	62	FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	6/3/2009	6/10/2009	7	29.36	12.02	6.01	28.37	148.8	109395	3856		Type 4
2	6/3/2009	7/1/2009	28	29.26	12.02	6.02	28.46	147.8	129310	4543		Type 1
3	6/3/2009	7/1/2009	28	29.21	12.02	6.01	28.37	148.0	128790	4540		Type 1

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	2.5	UNIT WT, ASTM C-138:		LOCATION: After bay canal section @ 10 yards			
PCT. AIR, ASTM C-231:	4.2%	CEMENT:	6 sack 4000 PSI				
W/C RATIO:		ADDITIVES:		Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.	Reviewed By: J.HILLS		

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	Goodfellow Brothers	LAB NO.:	W-3156
PROJECT NO:	07-30-026	TESTED BY:	RG
PROJECT:	Misc. Testing	CAST BY:	Client
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	FIELD TEMP. MIN.
CONTRACTOR:	Client	AIR TEMP:	FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	8/11/2008	8/19/2008	8	1.44	4.29	2.28	4.08	142.1	21770	5332		Type 4
2	8/11/2008	8/19/2008	8	1.39	4.12	2.30	4.15	140.3	22080	5314		Type 4

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	_____	UNIT WT, ASTM C-138:	_____	LOCATION:	Panel #1		
PCT. AIR, ASTM C-231:	_____	CEMENT:	_____		_____		
W/C RATIO:	_____	ADDITIVES:	_____	Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.	Reviewed By:	J.HILLS	

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	Goodfellow Brothers	LAB NO.:	W-3157
PROJECT NO:	07-30-026	TESTED BY:	RG
PROJECT:	Misc. Testing	CAST BY:	Client
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	FIELD TEMP. MIN.
CONTRACTOR:	Client	AIR TEMP:	FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	8/11/2008	8/19/2008	8	1.34	3.96	2.28	4.08	143.2	22170	5430		Type 4
2	8/11/2008	8/19/2008	8	1.46	4.34	2.28	4.08	142.4	20820	5099		Type 4

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	_____	UNIT WT, ASTM C-138:	_____	LOCATION:	Panel #1		
PCT. AIR, ASTM C-231:	_____	CEMENT:	_____		_____		
W/C RATIO:	_____	ADDITIVES:	_____	Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.	Reviewed By:	J.HILLS	

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	CCPUD	LAB NO.:	W-3206
PROJECT NO:	07-30-093	TESTED BY:	RG
PROJECT:	Chelan Falls	CAST BY:	Gene
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	76 FIELD TEMP. MIN.
CONTRACTOR:	GoodFellow	AIR TEMP:	77 FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	8/28/2008	9/4/2008	7	29.17	12.00	6.00	28.27	148.6	156505	5535		Type 1
2	8/28/2008	9/4/2008	7	29.26	12.00	6.00	28.27	149.0	161815	5723		Type 1
3	8/28/2008	9/25/2008	28	29.25	12.00	6.00	28.27	149.0	182905	6469		Type 1
4	8/28/2008	9/25/2008	28	29.22	12.00	6.00	28.27	148.8	176485	6242		Type 4
5	8/28/2008	H	H									
6	8/28/2008	H	H									

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	8.5"	UNIT WT, ASTM C-138:		LOCATION: outlet structure slab at 170 yds			
PCT. AIR, ASTM C-231:	4.2%	CEMENT:	6 sack				
W/C RATIO:		ADDITIVES:	Glennium	Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.		Reviewed By: J.HILLS	

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	Goodfellow Brothers	LAB NO.:	W-3263
PROJECT NO:	07-30-026	TESTED BY:	RG
PROJECT:	Misc. Testing	CAST BY:	A Hill
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	82 FIELD TEMP. MIN.
CONTRACTOR:	Client	AIR TEMP:	80 FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	9/15/2008	9/22/2008	7	29.06	11.95	6.00	28.27	148.6	132380	4682		Type 4
2	9/15/2008	9/22/2008	7	29.05	12.00	6.00	28.27	148.0	134645	4762		Type 1
3	9/15/2008	10/13/2008	28	29.12	12.00	6.00	28.27	148.3	172185	6090		Type 1
4	9/15/2008	10/13/2008	28	29.15	12.00	6.00	28.27	148.5	165870	5866		Type 4

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	5	UNIT WT, ASTM C-138:		LOCATION:	Outlet Structure		
PCT. AIR, ASTM C-231:	4.0%	CEMENT:	4000 Psi				
W/C RATIO:		ADDITIVES:	MBAE90, MB200N, 30/30 NS	Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.	Reviewed By:	J.HILLS	

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	CCPUD	LAB NO.:	W-3374
PROJECT NO:	07-30-093	TESTED BY:	RG
PROJECT:	Misc Testing	CAST BY:	A Hill
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	60 FIELD TEMP. MIN.
CONTRACTOR:	GoodFellow Brothers	AIR TEMP:	42 FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	10/27/2008	11/3/2008	7	28.57	12.00	6.00	28.27	145.5	152420	5391		Type 1
2	10/27/2008	11/24/2008	28	28.72	12.00	6.00	28.27	146.3	198600	7024		Type 1
3	10/27/2008	11/24/2008	28	28.44	12.00	6.00	28.27	144.8	194485	6879		Type 1

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	7.5	UNIT WT, ASTM C-138:		LOCATION: Hydraulic Structure			
PCT. AIR, ASTM C-231:		CEMENT:	7 sack	Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.			
W/C RATIO:		ADDITIVES:	Fibermesh Glennium 30130				

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	CCPUD	LAB NO.:	W-3468	
PROJECT NO:	09-30-005	TESTED BY:	RG	
PROJECT:	Chelan Dam	CAST BY:	Gene	
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	46	FIELD TEMP. MIN.
CONTRACTOR:	Client	AIR TEMP:	17	FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	1/27/2009	2/3/2009	7	28.33	11.97	6.00	28.27	144.6	124510	4404		Type 4
2	1/27/2009	2/24/2009	28	28.46	12.00	6.00	28.27	144.9	158565	5608		Type 4
3	1/27/2009	Hold	Hold	28.32	11.98	6.00	28.27	144.5				

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	2.5	UNIT WT, ASTM C-138:		LOCATION: Outlet slab and footing at 20 yards			
PCT. AIR, ASTM C-231:	5.5%	CEMENT:	4000 Mix				
W/C RATIO:		ADDITIVES:		Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.	Reviewed By: J.HILLS		

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	CCPUD	LAB NO.:	W-3490	
PROJECT NO:	09-30-005	TESTED BY:	RG	
PROJECT:	Chelan Dam	CAST BY:	Adam Hill	
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	50	FIELD TEMP. MIN.
CONTRACTOR:	Goodfellow Bros.	AIR TEMP:	36	FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	3/5/2009	3/12/2009	7	28.86	12.02	6.00	28.27	146.7	177795	6288		Type 1
2	3/5/2009	4/2/2009	28	28.85	12.02	6.00	28.27	146.7	224995	7958	4000	Type 1
3	3/5/2009	Hold	Hold	28.87	12.00	6.00	28.27				4000	
4	F/C	3/9/2009	4	28.95	12.00	6.00	28.27	147.5	93995	3325		Type 4

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	7	UNIT WT, ASTM C-138:		LOCATION:	Lower Level outlet structure		
PCT. AIR, ASTM C-231:	5.5%	CEMENT:	4000 Lb Mix		Stem wall at 50 yards		
W/C RATIO:		ADDITIVES:	Glennium 30/30	Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.	Reviewed By:	J.HILLS	

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	CCPUD	LAB NO.:	W-3536	
PROJECT NO:	09-30-005	TESTED BY:	RG	
PROJECT:	Cheland Dam	CAST BY:	AJ	
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	56	FIELD TEMP. MIN.
CONTRACTOR:	Client	AIR TEMP:	46	FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	5/6/2009	5/12/2009	6	29.54	12.04	6.00	28.27	149.9	166775	5898		Type 4
2	5/6/2009	5/13/2009	7	29.50	12.04	6.00	28.27	149.7	182270	6446		Type 4
3	5/6/2009	6/3/2009	28	29.50	12.04	6.00	28.27	149.7	222185	7858		Type 1
4	5/6/2009	6/3/2009	28	29.50	12.04	6.00	28.27	149.8	219900	7779		Type 4

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	7.5"	UNIT WT, ASTM C-138:		LOCATION: Concrete Bulkhead @ Pipe Taper			
PCT. AIR, ASTM C-231:	2.4%	CEMENT:	6.5 Sk	Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.			
W/C RATIO:		ADDITIVES:	Super P				

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CONCRETE CYLINDER REPORT ASTM C-31, C-39, C-172, C-143, C-231

CLIENT	CCPUD	LAB NO.:	W-3559	
PROJECT NO:	09-30-005	TESTED BY:	RG	
PROJECT:	Chelan Dam	CAST BY:	Alex	
SUPPLIER:	Chelan Concrete	MIX TEMP, ASTM C-1064:	58	FIELD TEMP. MIN.
CONTRACTOR:	Client	AIR TEMP:	50	FIELD TEMP. MAX.

CYL. NO.	DATE CAST	DATE TESTED	AGE IN DAYS	CYLINDER WT. LBS.	CYL. HT."	CYL. DIA."	SURFACE AREA SQ.IN.	UNIT WT. PCF	APPLIED LOAD	COMPRESSIVE STRENGTH (PSI)	REQD. STRENGTH	BREAK DESC.
1	5/14/2009	5/21/2009	7	29.33	12.01	6.00	28.27	149.3	154600	5468		Type 4
2	5/14/2009	5/21/2009	7	29.36	12.03	6.00	28.27	149.2	158715	5613		Type 4
3	5/14/2009	6/11/2009	28	29.34	12.05	6.00	28.27	148.8	180270	6376		Type 4
4	5/14/2009	6/11/2009	28	29.34	12.02	6.00	28.27	149.2	186950	6613		Type 1

CYLINDER DATA				GENERAL INFORMATION			
SLUMP, ASTM C-143:	7	UNIT WT, ASTM C-138:		LOCATION:	Overflow pipe bulkhead		
PCT. AIR, ASTM C-231:		CEMENT:	6 1/2 Sack 3/8 Agg				
W/C RATIO:		ADDITIVES:		Note: All sample material will be discarded after 30 days of receipt unless otherwise notified.	Reviewed By:	J.HILLS	