

**OFFICIAL COORDINATION REQUEST FOR  
NON-ROUTINE OPERATIONS AND MAINTENANCE**

**COORDINATION TITLE-** 16 LWG 13 EAL testing at McNary

**COORDINATION DATE-** June 13, 2016

**PROJECT-** McNary

**RESPONSE DATE-** August 5, 2016

**Description of the problem-** The Corps is required by a 2014 Settlement Agreement (Case 2:13-md-02494-LRS filed 8/14/2014) with the Columbia RiverKeeper pursuant to the Clean Water Act to test the feasibility of switching from petroleum based grease to Environmentally Acceptable Lubricants (EAL).

The candidate EAL grease must be tested in a real world environment. Based upon the compatibility testing, four representative units were selected for proof of concept testing (BON15, TDA1, MCN13, and LWG6). EALs will be applied to these unit's wicket gate grease systems. Monitoring of the EAL will be determined by installing transducers on the wicket gate stems, grease lines, servomotor drain lines, and the governor accumulator tank drain. The transducer will measure if the EAL has any adverse effects on the wicket gate system.

**Type of outage required-** EAL testing in unit 13 will require three outages. Dates shown below may deviate but duration of outage is not expected to change.

The first outage is planned for August 08 - 12. This outage does NOT require dewatering the unit but the unit will need to be locked out so that transducers can be installed on the wicket gate stems, grease lines, servomotor drain lines, and the governor accumulator tank drain. This means the unit will be out of service for 5 days while the equipment is being installed. The unit may be ran at night to get the proper amount of run time. Following installation of instrumentation and unit water-up, baseline testing of existing grease will be conducted.

The work required during the second outage will be done concurrently with an existing maintenance outage already planned for 03 OCT to 02 DEC 2016. This means Unit 13 will be out for maintenance and EAL testing from October 03 to December 02. A dewatered unit is required in order to purge the grease lines of the non-EAL and measuring bushings.

The third outage is currently planned for 01 DEC 2017 and will require dewatering of the unit in order for the bushings to be measured. The unit will need to be dewatered for 10 working days, from 01-15 DEC 2017.

**Impact on facility operation-** Unit 13 will be unavailable for operation during the

outage dates listed. Dewatering the unit will require Project support.

**Dates of impacts/repairs-** Testing is planned to begin in August 2016 thru December 2017 and planned to last up to 18 months.

First Outage: 2016 August 9-15 Aug dewatered unit

Second Outage: 2016 October 10/3–12/2 For Unit Overhaul- not able to run until after RTS dewatered unit.

Third Outage: 2017 Dec 1-15 dewatered unit

During fish passage season, all testing (baseline, periodic monitoring) will be within existing 1% limits. Testing / operation up to generator limits will only occur during periodic monitoring tests that fall during non-fish passage months.

Summary of Scheduled of Outages and Periodic Monitoring Tests as follows:

<u>Description</u>	<u>Date</u>	<u>Notes</u>
Unit Outage	2016 August 9-15	Instrumentation installation and Baseline Operational Testing
Unit Outage	2016 Oct3–Dec2	Pre-Test Bushing Measurements
Periodic Monitoring Test	18 OCT 2016	No Unit Outage
Periodic Monitoring Test	18 NOV 2016	No Unit Outage
Periodic Monitoring Test	18 JAN 2017	No Unit Outage
Periodic Monitoring Test	20 APR 2017	No Unit Outage
Periodic Monitoring Test	19 OCT 2017	No Unit Outage
Unit Outage	1-15 DEC 2017	Post-Test Bushing Measurements

**Length of time for repairs-** EALs will be applied during the first outage in August 2016 and the performance of equipment will be monitored for up to 18 months.

Two days are allotted for initial baseline testing; the first day for instrumentation, setup, and troubleshooting/calibration, and the second day for operational testing. One day of testing is allotted for the remaining periodic tests (months 0, 1, 3, 6, 12) with the new EAL grease.

**Expected impacts on fish passage-**

The hard one percent criteria will be enforced per the Fish Passage Plan dates, April 1 to October 31, during testing.

Unit 13 out of service dates of August 9 to 15 should have minimal impact of juvenile passage. In all likely hood, the unit priority will be saw tooth pattern, of which, unit 13 will be a part of. In 2015, for August 8 to 15, 435 smolts were bypass at the McNary juvenile fish facility.

Adult date for August 8 to 15, 2015 is from the Portland District website:  
<http://www.nwp.usace.army.mil/Missions/Environment/Fish/Counts.aspx>

Chinook, steelhead and sockeye will be predominate species running as reflected in Table 1 below. Unit 13 being out of service should have no effect on river flow as adjacent units will be operational and minimal effect on ladder attraction in August.

**Table 1. Running Sum Adult Fish Counts  
 McNary 8/8/2015 - 8/15/2015**

Date	All Chinook		Clipped Steelhead		Unclipped Steelhead		All Coho		Sockeye	
	daily	sum	daily	sum	daily	sum	daily	sum	daily	sum
8/8	558	558	268	268	270	270	0	0	146	146
8/9	645	1,203	375	643	378	648	0	0	221	367
8/10	644	1,847	400	1,043	289	937	1	1	140	507
8/11	1,278	3,125	324	1,367	356	1,293	0	1	169	676
8/12	1,013	4,138	269	1,636	291	1,584	1	2	109	785
8/13	865	5,003	275	1,911	248	1,832	0	2	101	886
8/14	847	5,850	396	2,307	325	2,157	0	2	64	950
8/15	900	6,750	428	2,735	385	2,542	0	2	59	1,009
Date	All Chinook		Clipped Steelhead		Unclipped Steelhead		All Coho		Sockeye	

The next two outages are October 3 to December 2, 2016 and December 1 to 15, 2017. The last time juvenile data collected at McNary for October to December was in 2002. In October, November and December, respectively, 18,309, 24,008 and 7,328 smolts were collected. Unit 13 being out of service should have minimal impact on juvenile passage with adjacent units available and the juvenile collection channel operational.

Adult passage for October 2015 is reflected in Table 2 below. One hundred and two adult sockeye also passed in October, 2015. Adult passage data for 2012 is listed in Table 3 below. This the last year fish counting was done in November and December. Chinook, steelhead and coho are the predominated species passing in October to December with October having the highest numbers. Again, unit 13 being out of service should have minimal to no impact on adult fish passage as adjacent units will be operational.

**Table 2. Running Sum Adult Fish Counts  
McNary 10/3/2015 - 10/31/2015**

Date	All Chinook		All Steelhead		Clipped Steelhead		Unclipped Steelhead		All Coho	
	daily	sum	daily	sum	daily	sum	daily	sum	daily	sum
10/3	9,114	9,114	2,850	2,850	2,025	2,025	825	825	531	531
10/4	10,443	19,557	2,452	5,302	1,661	3,686	791	1,616	605	1,136
10/5	6,173	25,730	1,519	6,821	1,030	4,716	489	2,105	424	1,560
10/6	8,046	33,776	2,069	8,890	1,325	6,041	744	2,849	571	2,131
10/7	5,734	39,510	2,023	10,913	1,362	7,403	661	3,510	187	2,318
10/8	7,187	46,697	2,068	12,981	1,428	8,831	640	4,150	334	2,652
10/9	6,069	52,766	1,800	14,781	1,228	10,059	572	4,722	324	2,976
10/10	5,363	58,129	1,347	16,128	869	10,928	478	5,200	157	3,133
10/11	7,378	65,507	2,125	18,253	1,295	12,223	830	6,030	264	3,397
10/12	5,187	70,694	2,090	20,343	1,127	13,350	963	6,993	176	3,573
10/13	3,456	74,150	1,794	22,137	888	14,238	906	7,899	105	3,678
10/14	6,930	81,080	2,665	24,802	1,436	15,674	1,229	9,128	165	3,843
10/15	5,602	86,682	1,871	26,673	985	16,659	886	10,014	96	3,939
10/16	4,124	90,806	1,787	28,460	973	17,632	814	10,828	73	4,012
10/17	3,613	94,419	1,368	29,828	744	18,376	624	11,452	92	4,104
10/18	3,773	98,192	1,180	31,008	754	19,130	426	11,878	99	4,203
10/19	3,387	101,579	974	31,982	588	19,718	386	12,264	90	4,293
10/20	3,125	104,704	1,081	33,063	695	20,413	386	12,650	93	4,386
10/21	2,074	106,778	743	33,806	435	20,848	308	12,958	52	4,438
10/22	1,183	107,961	473	34,279	309	21,157	164	13,122	32	4,470
10/23	1,302	109,263	488	34,767	265	21,422	223	13,345	27	4,497
10/24	1,274	110,537	480	35,247	309	21,731	171	13,516	31	4,528
10/25	1,495	112,032	427	35,674	229	21,960	198	13,714	26	4,554
10/26	1,832	113,864	490	36,164	284	22,244	206	13,920	30	4,584
10/27	1,285	115,149	424	36,588	242	22,486	182	14,102	33	4,617
10/28	1,696	116,845	267	36,855	169	22,655	98	14,200	25	4,642
10/29	1,170	118,015	257	37,112	170	22,825	87	14,287	34	4,676

10/30	1,478	119,493	322	37,434	203	23,028	119	14,406	30	4,706
10/31	1,405	120,898	453	37,887	288	23,316	165	14,571	22	4,728
	<b>daily</b>	<b>sum</b>	<b>daily</b>	<b>sum</b>	<b>daily</b>	<b>sum</b>	<b>daily</b>	<b>sum</b>	<b>daily</b>	<b>sum</b>
<b>Date</b>	<b>All Chinook</b>		<b>All Steelhead</b>		<b>Clipped Steelhead</b>		<b>Unclipped Steelhead</b>		<b>All Coho</b>	

**Table 3. Running Sum Adult Fish Counts  
McNary 10/3/2012 - 12/29/2012**

Date	All Chinook		All Steelhead		Clipped Steelhead		Unclipped Steelhead		All Coho	
	daily	sum	daily	sum	daily	sum	daily	sum	daily	sum
10/3/2012	3,159	3,159	1,379	1,379	979	979	400	400	113	113
10/4/2012	1,770	4,929	809	2,188	585	1,564	224	624	64	177
10/5/2012	2,541	7,470	1,181	3,369	834	2,398	347	971	85	262
10/6/2012	2,403	9,873	1,332	4,701	1,005	3,403	327	1,298	106	368
10/7/2012	1,689	11,562	1,190	5,891	888	4,291	302	1,600	84	452
10/8/2012	1,188	12,750	788	6,679	612	4,903	176	1,776	190	642
10/9/2012	1,467	14,217	894	7,573	663	5,566	231	2,007	248	890
10/10/2012	1,403	15,620	1,039	8,612	816	6,382	223	2,230	100	990
10/11/2012	1,560	17,180	1,103	9,715	806	7,188	297	2,527	98	1,088
10/12/2012	1,130	18,310	809	10,524	564	7,752	245	2,772	59	1,147
10/13/2012	1,362	19,672	1,508	12,032	1,012	8,764	496	3,268	87	1,234
10/14/2012	1,503	21,175	1,278	13,310	873	9,637	405	3,673	70	1,304
10/15/2012	1,389	22,564	1,296	14,606	857	10,494	439	4,112	94	1,398
10/16/2012	877	23,441	1,003	15,609	675	11,169	328	4,440	91	1,489
10/17/2012	715	24,156	846	16,455	503	11,672	343	4,783	92	1,581
10/18/2012	534	24,690	740	17,195	478	12,150	262	5,045	52	1,633
10/19/2012	439	25,129	721	17,916	416	12,566	305	5,350	111	1,744
10/20/2012	654	25,783	1,598	19,514	839	13,405	759	6,109	187	1,931
10/21/2012	739	26,522	2,397	21,911	1,227	14,632	1,170	7,279	181	2,112
10/22/2012	293	26,815	911	22,822	485	15,117	426	7,705	86	2,198
10/23/2012	245	27,060	655	23,477	377	15,494	278	7,983	66	2,264
10/24/2012	258	27,318	421	23,898	222	15,716	199	8,182	53	2,317
10/25/2012	247	27,565	372	24,270	205	15,921	167	8,349	22	2,339
10/26/2012	265	27,830	387	24,657	217	16,138	170	8,519	26	2,365
10/27/2012	182	28,012	257	24,914	144	16,282	113	8,632	28	2,393
10/28/2012	201	28,213	226	25,140	138	16,420	88	8,720	33	2,426
10/29/2012	235	28,448	223	25,363	153	16,573	70	8,790	18	2,444

10/30/2012	325	28,773	374	25,737	261	16,834	113	8,903	33	2,477
10/31/2012	313	29,086	258	25,995	153	16,987	105	9,008	14	2,491
11/1/2012	109	29,195	236	26,231	193	17,180	43	9,051	4	2,495
11/2/2012	158	29,353	291	26,522	252	17,432	39	9,090	5	2,500
11/3/2012	225	29,578	493	27,015	415	17,847	78	9,168	3	2,503
11/4/2012	213	29,791	404	27,419	337	18,184	67	9,235	11	2,514
11/5/2012	96	29,887	467	27,886	381	18,565	86	9,321	37	2,551
11/6/2012	66	29,953	366	28,252	319	18,884	47	9,368	28	2,579
11/7/2012	47	30,000	310	28,562	215	19,099	95	9,463	9	2,588
11/8/2012	60	30,060	358	28,920	278	19,377	80	9,543	13	2,601
11/9/2012	35	30,095	236	29,156	203	19,580	33	9,576	25	2,626
11/10/2012	32	30,127	125	29,281	98	19,678	27	9,603	13	2,639
11/11/2012	73	30,200	101	29,382	76	19,754	25	9,628	33	2,672
11/12/2012	16	30,216	157	29,539	130	19,884	27	9,655	39	2,711
11/13/2012	22	30,238	91	29,630	74	19,958	17	9,672	33	2,744
11/14/2012	9	30,247	53	29,683	32	19,990	21	9,693	22	2,766
11/15/2012	4	30,251	44	29,727	31	20,021	13	9,706	20	2,786
11/16/2012	2	30,253	70	29,797	52	20,073	18	9,724	28	2,814
11/17/2012	12	30,265	69	29,866	46	20,119	23	9,747	25	2,839
11/18/2012	17	30,282	98	29,964	59	20,178	39	9,786	15	2,854
11/19/2012	9	30,291	64	30,028	42	20,220	22	9,808	19	2,873
11/20/2012	5	30,296	51	30,079	33	20,253	18	9,826	20	2,893
11/21/2012	11	30,307	77	30,156	56	20,309	21	9,847	21	2,914
11/22/2012	6	30,313	71	30,227	49	20,358	22	9,869	19	2,933
11/23/2012	13	30,326	66	30,293	41	20,399	25	9,894	9	2,942
11/24/2012	11	30,337	75	30,368	49	20,448	26	9,920	18	2,960
11/25/2012	16	30,353	106	30,474	71	20,519	35	9,955	32	2,992
11/26/2012	15	30,368	104	30,578	68	20,587	36	9,991	27	3,019
11/27/2012	5	30,373	106	30,684	61	20,648	45	10,036	6	3,025
11/28/2012	6	30,379	90	30,774	56	20,704	34	10,070	5	3,030
11/29/2012	4	30,383	66	30,840	44	20,748	22	10,092	1	3,031
11/30/2012	9	30,392	86	30,926	54	20,802	32	10,124	10	3,041
12/1/2012	8	30,400	35	30,961	19	20,821	16	10,140	9	3,050
12/2/2012	5	30,405	60	31,021	40	20,861	20	10,160	7	3,057
12/3/2012	14	30,419	60	31,081	43	20,904	17	10,177	6	3,063
12/4/2012	6	30,425	87	31,168	55	20,959	32	10,209	2	3,065
12/5/2012	5	30,430	139	31,307	90	21,049	49	10,258	0	3,065
12/6/2012	8	30,438	93	31,400	63	21,112	30	10,288	3	3,068

12/7/2012	10	30,448	139	31,539	93	21,205	46	10,334	1	3,069
12/8/2012	3	30,451	266	31,805	173	21,378	93	10,427	4	3,073
12/9/2012	7	30,458	158	31,963	120	21,498	38	10,465	1	3,074
12/10/2012	2	30,460	185	32,148	114	21,612	71	10,536	1	3,075
12/11/2012	1	30,461	139	32,287	88	21,700	51	10,587	0	3,075
12/12/2012	2	30,463	191	32,478	120	21,820	71	10,658	5	3,080
12/13/2012	1	30,464	119	32,597	75	21,895	44	10,702	4	3,084
12/14/2012	0	30,464	118	32,715	74	21,969	44	10,746	1	3,085
12/15/2012	0	30,464	74	32,789	53	22,022	21	10,767	0	3,085
12/16/2012	0	30,464	64	32,853	43	22,065	21	10,788	1	3,086
12/17/2012	0	30,464	63	32,916	40	22,105	23	10,811	0	3,086
12/18/2012	3	30,467	53	32,969	30	22,135	23	10,834	0	3,086
12/19/2012	2	30,469	39	33,008	22	22,157	17	10,851	0	3,086
12/20/2012	2	30,471	36	33,044	20	22,177	16	10,867	2	3,088
12/21/2012	1	30,472	49	33,093	25	22,202	24	10,891	1	3,089
12/22/2012	2	30,474	24	33,117	8	22,210	16	10,907	0	3,089
12/23/2012	2	30,476	23	33,140	17	22,227	6	10,913	0	3,089
12/24/2012	1	30,477	22	33,162	14	22,241	8	10,921	0	3,089
12/25/2012	0	30,477	32	33,194	22	22,263	10	10,931	1	3,090
12/26/2012	0	30,477	19	33,213	8	22,271	11	10,942	0	3,090
12/27/2012	2	30,479	13	33,226	7	22,278	6	10,948	0	3,090
12/28/2012	-1	30,478	7	33,233	3	22,281	4	10,952	0	3,090
12/29/2012	0	30,478	9	33,242	7	22,288	2	10,954	0	3,090
	<b>daily</b>	<b>sum</b>	<b>daily</b>	<b>sum</b>	<b>daily</b>	<b>sum</b>	<b>daily</b>	<b>sum</b>	<b>daily</b>	<b>sum</b>
<b>Date</b>	<b>All Chinook</b>		<b>All Steelhead</b>		<b>Clipped Steelhead</b>		<b>Unclipped Steelhead</b>		<b>All Coho</b>	

## Comments from agencies

### Final results

Please email or call with questions or concerns.

Thank you,

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