

Form R-69  
01/2015

UT53989

APPLICATION FOR A DAM NOT REQUIRING  
SUBMISSION OF FORMAL PLANS  
UNDER SECTION 73-5A-202  
STATE OF UTAH

Received / / Entered / / Application No - -

The following application is submitted pursuant to Section 73-5a-204

1. **APPLICANT INFORMATION**  
 Name(s): Wohali Partners LLC - Jim Boyden Telephone: 801-200-4586  
 Address: 2120 South Highland Drive # 209  
 City: Salt Lake City State: UT Zip Code: 84106
  
2. **PURPOSE OF RESERVOIR**  
 Stock Pond \_\_\_\_\_ Flood Control  \_\_\_\_\_ Recreation  \_\_\_\_\_  
 Irrigation  \_\_\_\_\_ Debris Basin  \_\_\_\_\_ Fishery  \_\_\_\_\_  
 Regulating Reservoir  \_\_\_\_\_ Sedimentation  \_\_\_\_\_ Wildlife  \_\_\_\_\_  
 Diversion Dam \_\_\_\_\_ Evaporation \_\_\_\_\_ Tailings \_\_\_\_\_  
 Other (describe) Golf Course Irrigation Pond
  
3. **LEGAL LOCATION OF DAM**  
 County Summit Quarter/Quarter SWNW Section 18  
 Township T2N Range R5E Base & Meridian SLBM
  
- 4A. **FOR DAMS BUILT ON A NATURAL STREAM OR DRAINAGE**  
 Name of Natural Stream or Drainage Lewis Canyon  
 OR Drainage Area above dam 5.9 (square miles)  
 Distance below dam to nearest structure occupied by humans 2 Mile to Echo Res (miles)
  
- 4B. **FOR DAMS BUILT OFF- CHANNEL**  
 Source of Water (ie: well, canal, ditch, etc.) NA  
 Capacity of source to reservoir NA (cubic feet per second)  
 Distance below dam to nearest structure occupied by humans NA (miles)
  
5. **DIMENSIONS OF DAM**  
 Height (vertical) 23 feet Length (at top) 300 feet Width (at top) 10 feet  
 Upstream Slope 3 Horizontal on 1 Vertical  
 Downstream Slope 2 Horizontal on 1 Vertical  
 Surface Area at Spillway Crest 2 (acres) Capacity at Spillway Crest 19 (acre-feet)  
 Type of Dam (ie: earthfill, concrete, masonry, rockfill, etc.) Earthfill
  
6. **LOW LEVEL OUTLET**  
 Inside diameter of outlet 12 (inches) Total outlet length 100 (feet)  
 Type of Pipe Concrete encased Type of gate or valve Slide  
 Location of gate or valve (ie: upstream, downstream, center, etc.) Upstream  
 Outlet capacity with gate open and reservoir at maximum capacity 8 cfs (cubic feet per second)
  
7. **SPILLWAY**  
 Crest Length (width of spillway) 20 (feet) Depth (bottom of spillway to top of dam) 3 (feet)  
 Type of Spillway (ie: earth channel, pipe, concrete, rock channel) Rock channel in natural ground  
 Spillway capacity with water at top of dam 300 cfs (cubic feet per second)  
 Control (i.e. gates, flashboards, etc.) None

RECEIVED  
JAN 28 2020

8.

**WATER RIGHTS**

Describe: Coalville City Municipal Water Right from old Boyden Well a15517 (35-2769) 0.078 cfs = 56 acft/yr  
2 acre pond with Coalville Evaporation Consumption of 18.54" = 1.55 ft = 3.10 acft/yr (DWRi - USU)

9.

**COMMENTS**

Breach flows are less than the 100 year flood or the spillway capacity, with a maximum flood depth of 4 ft.

Matt Lindon PE, Loughin Water Associates submits this application as a consulnig agent for  
Jim Boyden, Wohali Partners, LLC

10.

**PLANS**

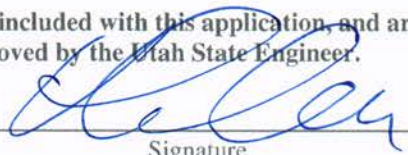
The following drawings, including appropriate scales and dimensions, must be attached to the application:

- 1) A location map, such as a 7.5 minute USGS Quad Map, showing the exact location of the dam
- 2) A plan view of the dam and reservoir including the location of the spillway, outlet, and channel or supply source.
- 3) A profile of the dam along the centerline of the dam showing the natural ground, the top of the dam, and the depth to clearing, keyway bottom or cutoff trench.
- 4) A Cross Section of the dam through the outlet showing the location of the outlet and the types of materials the dam is to be constructed of.
- 5) Details of the spillway, outlet, drains, gates or valves, or other features of the dam or appurtenant structures.

The undersigned acknowledge they have read the instructions included with this application, and are aware no construction is to begin until this application has been approved by the Utah State Engineer.

1/15/2020

Date

  
Signature

**- For Office Use Only -**

Water Rights in Order By \_\_\_\_\_ Date \_\_\_\_\_

Water Right Numbers if Applicable \_\_\_\_\_

Regional Engineer's Hazard Rating (High, Moderate, Low) \_\_\_\_\_

Reviewed by Dam Safety By DKM Date 2/7/2020

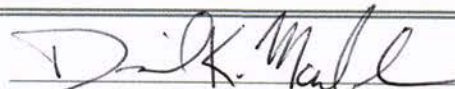
Estimated Breach Flow at Dam 250 (cubic feet per second)

Comments \_\_\_\_\_

FINALIZE WR APPROVAL - CHECK w/ MIKE DRAKE - OK FROM MIKE 2/7/2020

2/7/2020

Date of Approval

  
State Engineer or Dam Safety Director



David Marble &lt;davemarble@utah.gov&gt;

**Re: Wolhali Profiles and water rights**

1 message

**Michael Drake** <michaeldrake@utah.gov>  
To: David Marble <davemarble@utah.gov>

Fri, Feb 7, 2020 at 1:54 PM

Yes. It sounds like this pond is a regulating reservoir. We've taken the position in the past that small regulating reservoirs such as this don't require a storage component to the water right. As such, I don't think there are water rights issues with what they are proposing.

Michael Drake, P.E.  
Regional Engineer  
Weber River/Western Region  
Direct Line: (801) 538-7397  
Main Line: (801) 538-7240

*Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.*

On Fri, Feb 7, 2020 at 1:50 PM David Marble <davemarble@utah.gov> wrote:

Mike,

Did Matt adequately answer your questions concerning the water rights for the projects?

dave

----- Forwarded message -----

From: **Matt Lindon** <matt@loughlinwater.com>  
Date: Fri, Jan 31, 2020 at 1:18 PM  
Subject: RE: Wolhali Profiles and water rights  
To: Michael Drake <michaeldrake@utah.gov>  
Cc: davemarble@utah.gov <davemarble@utah.gov>, roddypirouznia@utah.gov <roddypirouznia@utah.gov>, jboyden@wohalipartners.com <jboyden@wohalipartners.com>

Mike

Thanks for the quick reply. This dam is just upstream of the Coalville City Icy Springs source that will be the predominant source and will function as a regulating reservoir for the development that is all part of Coalville City.

Thanks for your consideration, let me know if you need more.

Matt

*Matthew C. Lindon, P.E.*

**Hydrologist****Loughlin Water Associates****3100 Pinebrook Road, Suite 1100****Park City Utah 84098**

matt@loughlinwater.com

**435-659-1326 cell****435-649-4005 office**



&lt; = &gt;

**From:** Michael Drake <michaeldrake@utah.gov>  
**Sent:** Friday, January 31, 2020 10:53 AM  
**To:** Matt Lindon <matt@loughlinwater.com>  
**Cc:** davemarble@utah.gov; roddypirouznia@utah.gov; jboyden@wohalipartners.com  
**Subject:** Re: Wolhali Profiles and water rights

Help me understand the purpose and location of this pond. Does this sit at the city's points of diversion at Icy and All Good Springs? If this functions as a regulating reservoir, then we're probably ok with this falling under the umbrella of the approved municipal change application.

Michael Drake, P.E.  
Regional Engineer  
Weber River/Western Region  
Direct Line: (801) 538-7397  
Main Line: (801) 538-7240

*Emails to and from this email address may be considered public records and thus subject to Utah GRAMA requirements.*

On Fri, Jan 31, 2020 at 9:57 AM Matt Lindon <matt@loughlinwater.com> wrote:

Dave and Mike,

Here are our cross sections for the Wolhali Small Dam Application. 18.36 acft. You should be able to print this as an 8x10.

We are working on the water rights. I'll talk to Mike but it seems like this is a Coalville Municipal water right that they can take from any source and use for any application.

Thanks for your patience and assistance.

Matt

*Matthew C. Lindon, P.E.*

**Hydrologist**

**Loughlin Water Associates**  
3100 Pinebrook Road, Suite 1100  
Park City Utah 84098

[matt@loughlinwater.com](mailto:matt@loughlinwater.com)

**435-659-1326 cell**

Estimated Consumptive Use for the NWS Station at COALVILLE  
 From a Calibrated SCS Blaney-Criddle Equation using data from PARK CITY 10-26-1994  
 Years of Data Available; NWS: 1961-1990 PARK CITY: 1984-1990 Elev. 5550 ft., Lat. 40.92

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
% Day Light	6.66	6.64	8.27	8.96	10.10	10.19	10.35	9.63	8.40	7.70	6.64	6.45	100.00
Avg Temp F	23.70	28.07	35.47	43.93	51.89	59.70	66.31	64.47	56.01	46.84	35.44	25.66	44.79
Std Dev Temp	4.27	4.31	4.02	2.82	2.07	1.99	1.19	1.74	2.15	2.43	2.85	3.76	1.13
Avg Prec in.	1.08	1.12	1.52	1.96	1.79	1.24	0.93	1.05	1.38	1.54	1.58	1.27	16.48
Std Dev Prec	0.86	0.71	0.71	1.07	1.02	1.01	0.58	1.11	1.22	0.96	0.86	1.01	3.92
SCS-BC f in.	0.47	0.56	0.96	1.77	3.07	4.38	5.72	4.98	3.09	1.80	0.75	0.50	28.04
Std Dev f	0.09	0.09	0.21	0.30	0.31	0.36	0.25	0.32	0.29	0.24	0.13	0.07	1.08
ALFALFA													
Cal SCS-BC k				0.09	1.53	1.23	1.28	0.99	1.14				
Cal SCS-BC Et				0.16	4.69	5.38	7.34	4.95	3.51				26.04
Std Dev Et				0.03	0.48	0.44	0.31	0.32	0.33				0.97
Net Irr in.					3.26	4.39	6.59	4.11	2.41				20.76
PASTURE													
Cal SCS-BC k				0.27	0.98	1.06	0.87	0.88	0.95				
Cal SCS-BC Et				0.48	3.01	4.64	4.97	4.40	2.94				20.43
Std Dev Et				0.08	0.31	0.38	0.21	0.28	0.28				0.78
Net Irr in.					1.57	3.64	4.22	3.55	1.84				14.83
OTHR HAY													
Cal SCS-BC k				0.32	1.51	1.71	1.12	0.51	0.41				
Cal SCS-BC Et				0.57	4.63	7.48	6.42	2.53	1.25				22.88
Std Dev Et				0.10	0.47	0.61	0.28	0.16	0.12				0.99
Net Irr in.					3.20	6.49	5.67	1.69	0.15				17.19
SP GRAIN													
Cal SCS-BC k				0.07	0.61	1.42	1.34	0.88					
Cal SCS-BC Et				0.13	1.88	6.21	7.64	4.37					20.23
Std Dev Et				0.02	0.19	0.51	0.33	0.28					0.80
Net Irr in.					0.44	5.22	6.90	3.53					16.09
TURF													
Cal SCS-BC k				0.68	1.00	0.91	0.75	0.76	0.84	0.30			
Cal SCS-BC Et				1.19	3.05	3.99	4.28	3.79	2.60	0.53			19.44
Std Dev Et				0.20	0.31	0.33	0.18	0.25	0.25	0.07			0.79
Net Irr in.					1.62	3.00	3.53	2.94	1.50				12.60
E-LAKE													
Cal SCS-BC k	1.63	1.90	1.80	1.62	1.37	1.11	0.92	1.00	1.20	1.31	1.65	1.37	
Cal SCS-BC Evap	0.77	1.06	1.73	2.87	4.19	4.88	5.27	4.99	3.70	2.35	1.24	0.68	33.71
Std Dev Evap	0.14	0.17	0.37	0.49	0.43	0.40	0.23	0.32	0.35	0.32	0.21	0.10	1.44
Net Loss in.			0.21	0.91	2.39	3.64	4.34	3.93	2.32	0.81			<u>18.54</u>
ET Ref													
Cal SCS-BC k	1.81	2.11	2.00	1.82	1.78	1.63	1.34	1.36	1.51	1.46	1.83	1.52	
Estimated Etr	0.86	1.18	1.92	3.22	5.45	7.13	7.64	6.76	4.65	2.63	1.37	0.75	43.58
Std Dev Et	0.15	0.18	0.42	0.55	0.55	0.58	0.33	0.44	0.44	0.36	0.24	0.11	1.78

All Values are 30 Year Averages. Effective Precipitation is 80 Percent of Total During Growing Season  
 Blank values (if any) of ET Ref in early and late months denotes only seasonal calibration data  
 Adapted from Hill, 1994, Consumptive Use of Irrigated Crops in Utah, Ut Ag Exp Stn Res Rpt #145 Utah State Univ., Lo

Utah DWRi  
Small Dam  
Application  
Appendix  
Wohali LLC  
Project,  
Coalville,  
Summit Co.  
Utah

January 15

2020

Matt Lindon, PE,  
Hydrologist  
Loughlin Water Assoc,  
Park City Utah. 84098





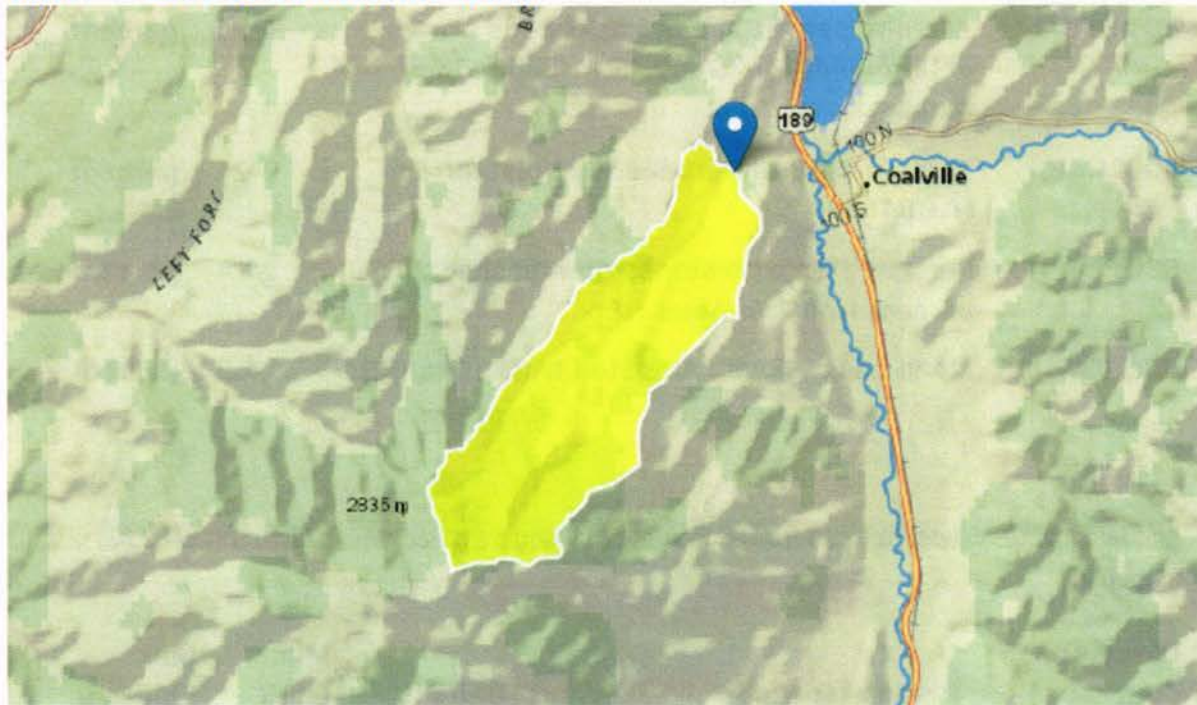
# Wohali Dam Hydrology Report, Matt Lindon, PE, Loughlin Water Associates, August 2019

Region ID: UT

Workspace ID: UT20190820143740693000

Clicked Point (Latitude, Longitude): 40.91724, -111.42340

Time: 2019-08-20 08:37:57 -0600



## StreamStats USGS

### Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5.9	square miles
PRECIP	Mean Annual Precipitation	21.7	inches

## 2. USGS StreamStat results



Parameter Code	Parameter Description	Value	Unit
ELEV	Mean Basin Elevation	6950	feet
FOREST	Percentage of area covered by forest	63.6	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	2.47	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.24	percent
LU92HRBN	Percent Natural Herbaceous Upland from NLCD1992	7.71	percent
SLOP30_10M	Percent area with slopes greater than 30 percent from 10-meter NED	31.4	percent
BSLDEM10M	Mean basin slope computed from 10 m DEM	24.3	percent

Annual Flow Statistics Parameters[100 Percent (5.9 square miles) Mean Flow SIR08 5230 Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.9	square miles	11.9	278
PRECIP	Mean Annual Precipitation	21.7	inches	22	40.9

3. StreamStats 2

Statistic	Value	Unit	SE	SEp	Equiv. Yrs.
5 Year Peak Flood	101	ft <sup>3</sup> /s	54	54	1.5
10 Year Peak Flood	136	ft <sup>3</sup> /s	53	53	2
25 Year Peak Flood	196	ft <sup>3</sup> /s	55	55	2.6
50 Year Peak Flood	250	ft <sup>3</sup> /s	57	57	2.9
100 Year Peak Flood	299	ft <sup>3</sup> /s	58	58	3.3
200 Year Peak Flood	363	ft <sup>3</sup> /s	63	63	3.3
500 Year Peak Flood	449	ft <sup>3</sup> /s	68	68	3.5

*Peak-Flow Statistics Citations*

**Kenney, T.A., Wilkowske, C.D., and Wright, S.J.,2007, Methods for Estimating Magnitude and Frequency of Peak Flows for Natural Streams in Utah: U.S. Geological Survey Scientific Investigations Report 2007-5158, 28 p. (<http://pubs.usgs.gov/sir/2007/5158/>)**

4. USGS StreamStats Results



SIMPLIFIED DAMBREAK MODEL (SMPDBK) VERSION: 9/91

BY D.L. FREAD, J.M. LEWIS, & J.N. WETMORE - PHONE: (301) 427-7640

NWS HYDROLOGIC RESEARCH LAB W/OH3, 1325 EAST-WEST HIGHWAY,

SILVER SPRING, MD 20910

THE DATA FOR THIS DAM IS AS FOLLOWS:

TYPE OF DAM (IDAM)	EARTH
DAM BREACH ELEVATION (HDE)	6020.00 FT
FINAL BREACH ELEVATION (BME)	6000.00 FT
VOLUME OF RESERVOIR (VOL)	20. ACRE-FT
SURFACE AREA OF RESERVOIR (SA)	1.00 ACRES
FINAL BREACH WIDTH (BW)	20.00 FT
TIME OF DAM FAILURE (TFM)	20.00 MINUTES
NON-BREACH FLOW (QO)	1.00 CFS
DISTANCE TO PRIMARY PT OF INTEREST (DISTTN)	2.00 MILES
DEAD STORAGE EQUIV. MANN. N (CMS)	.50

CROSS SECTION NO. 1

FLOOD DEPTH (FLD) 3.00 FT

ELEV.(FT) (HS) 5800.0 5810.0 5815.0 5820.0

TWIDTHS(FT) (BS) 10.0 20.0 100.0 300.0

INACTIVE TW(FT) (BSS) .0 .0 .0 .0

MANNING N (CM) .100 .050 .050 .050

CROSS SECTION NO. 2

REACH LENGTH (D) 2.00 MI

FLOOD DEPTH (FLD) 3.00 FT

ELEV.(FT) (HS) 5600.0 5610.0 5615.0 5620.0

TWIDTHS(FT) (BS) 10.0 20.0 100.0 300.0

INACTIVE TW(FT) (BSS) .0 .0 .0 .0

MANNING N (CM) .100 .050 .050 .050

NAME OF DAM: WOHALI

NAME OF RIVER: WEBER

RVR MILE MAX FLOW MAX ELEV MAX DEPTH TIME(HR) TIME(HR) TIME(HR) FLOOD  
FROM DAM (CFS) (FT-MSL) (FT) MAX DEPTH FLOOD DEFLOOD DEPTH(FT)

\*\*\*\*\*

.00 **256. 5803.80 3.80 .33 .21 .91 3.00**

2.00 **248. 5603.75 3.75 .85 .73 1.42 3.00**

ANALYSIS IS COMPLETE

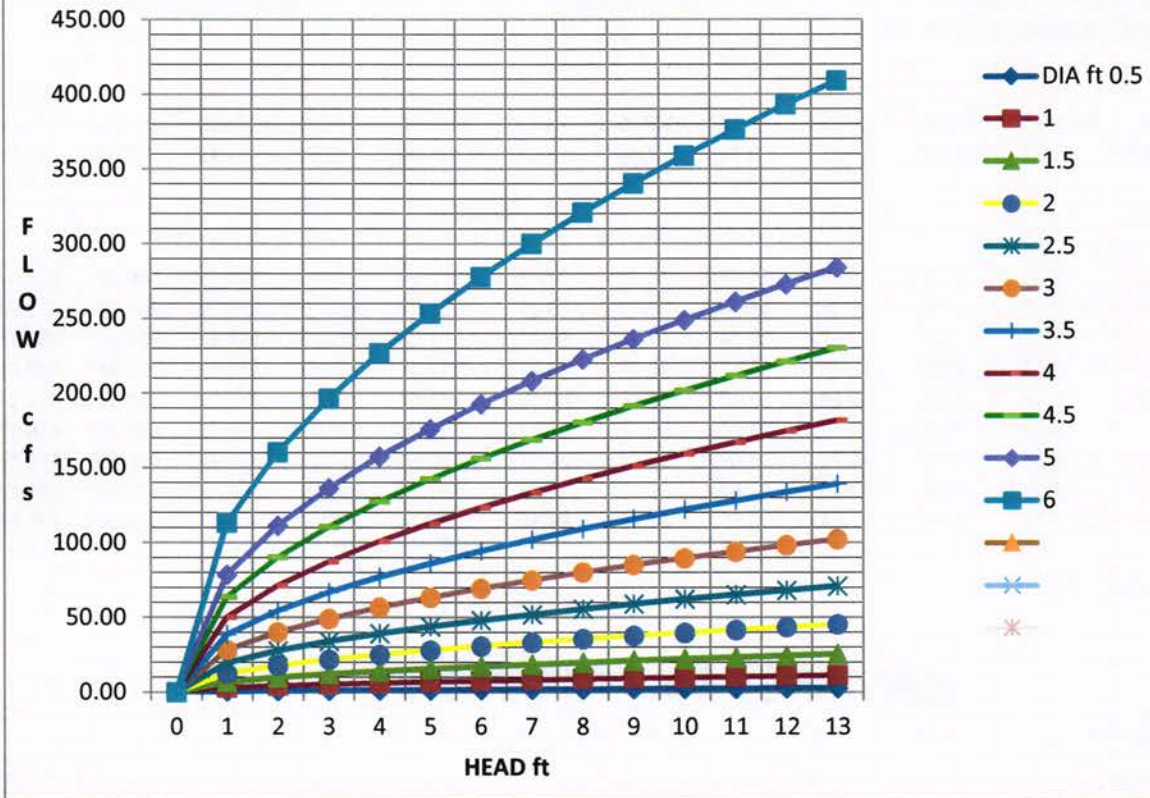
5. NWS SMPDBK Dam breach calculations



DROP INLET ORIFICE ENTRANCE FLOWS			MCL		10/2/2019						
			INPUT IN RED		$Q = C \times A \times (2 \times g \times h)^{1/2}$						
ENTRANCE COEFF	0.50		START	INCREMENT							
DIA ft	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	6
AREA sqft	0.20	0.79	1.77	3.14	4.91	7.07	9.62	12.57	15.90	19.64	28.27
HEIGHT ft	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.79	3.15	7.09	12.61	19.70	28.36	38.60	50.42	63.82	78.79	113.45
2	1.11	4.46	10.03	17.83	27.85	40.11	54.60	71.31	90.25	111.42	160.44
3	1.36	5.46	12.28	21.83	34.11	49.13	66.87	87.33	110.53	136.46	196.50
4	1.58	6.30	14.18	25.21	39.39	56.73	77.21	100.84	127.63	157.57	226.90
5	1.76	7.05	15.86	28.19	44.04	63.42	86.32	112.75	142.70	176.17	253.68
6	1.93	7.72	17.37	30.88	48.25	69.47	94.56	123.51	156.32	192.98	277.90
7	2.08	8.34	18.76	33.35	52.11	75.04	102.14	133.41	168.84	208.45	300.16
8	2.23	8.91	20.06	35.65	55.71	80.22	109.19	142.62	180.50	222.84	320.89
9	2.36	9.45	21.27	37.82	59.09	85.09	115.81	151.27	191.45	236.36	340.35
10	2.49	9.97	22.42	39.86	62.29	89.69	122.08	159.45	201.80	249.14	358.76
11	2.61	10.45	23.52	41.81	65.33	94.07	128.04	167.23	211.65	261.30	376.27
12	2.73	10.92	24.56	43.67	68.23	98.25	133.73	174.67	221.06	272.92	393.00
13	2.84	11.36	25.57	45.45	71.02	102.26	139.19	181.80	230.09	284.06	409.05
14	2.95	11.79	26.53	47.17	73.70	106.12	144.45	188.66	238.78	294.79	424.49
15	3.05	12.21	27.46	48.82	76.28	109.85	149.52	195.29	247.16	305.13	439.39
16	3.15	12.61	28.36	50.42	78.79	113.45	154.42	201.69	255.26	315.14	453.80
17	3.25	12.99	29.24	51.97	81.21	116.94	159.17	207.90	263.12	324.84	467.77
18	3.34	13.37	30.08	53.48	83.56	120.33	163.79	213.92	270.75	334.26	481.33
19	3.43	13.74	30.91	54.95	85.85	123.63	168.27	219.79	278.17	343.42	494.52
20	3.52	14.09	31.71	56.37	88.08	126.84	172.65	225.50	285.39	352.34	507.37
21	3.61	14.44	32.49	57.77	90.26	129.97	176.91	231.06	292.44	361.04	519.90
22	3.70	14.78	33.26	59.13	92.38	133.03	181.07	236.50	299.32	369.53	532.13
23	3.78	15.11	34.01	60.45	94.46	136.02	185.14	241.82	306.05	377.84	544.09
24	3.86	15.44	34.74	61.75	96.49	138.95	189.12	247.02	312.63	385.97	555.79
25	3.94	15.76	35.45	63.03	98.48	141.81	193.02	252.11	319.08	393.93	567.25
26	4.02	16.07	36.16	64.28	100.43	144.62	196.85	257.10	325.40	401.73	578.49
27	4.09	16.38	36.84	65.50	102.34	147.38	200.60	262.00	331.60	409.38	589.51
28	4.17	16.68	37.52	66.70	104.22	150.08	204.28	266.81	337.68	416.89	600.32
29	4.24	16.97	38.18	67.88	106.07	152.74	207.89	271.53	343.66	424.27	610.95
30	4.32	17.26	38.84	69.04	107.88	155.35	211.45	276.18	349.53	431.52	621.39

6. Outlet Entrance condition capacity

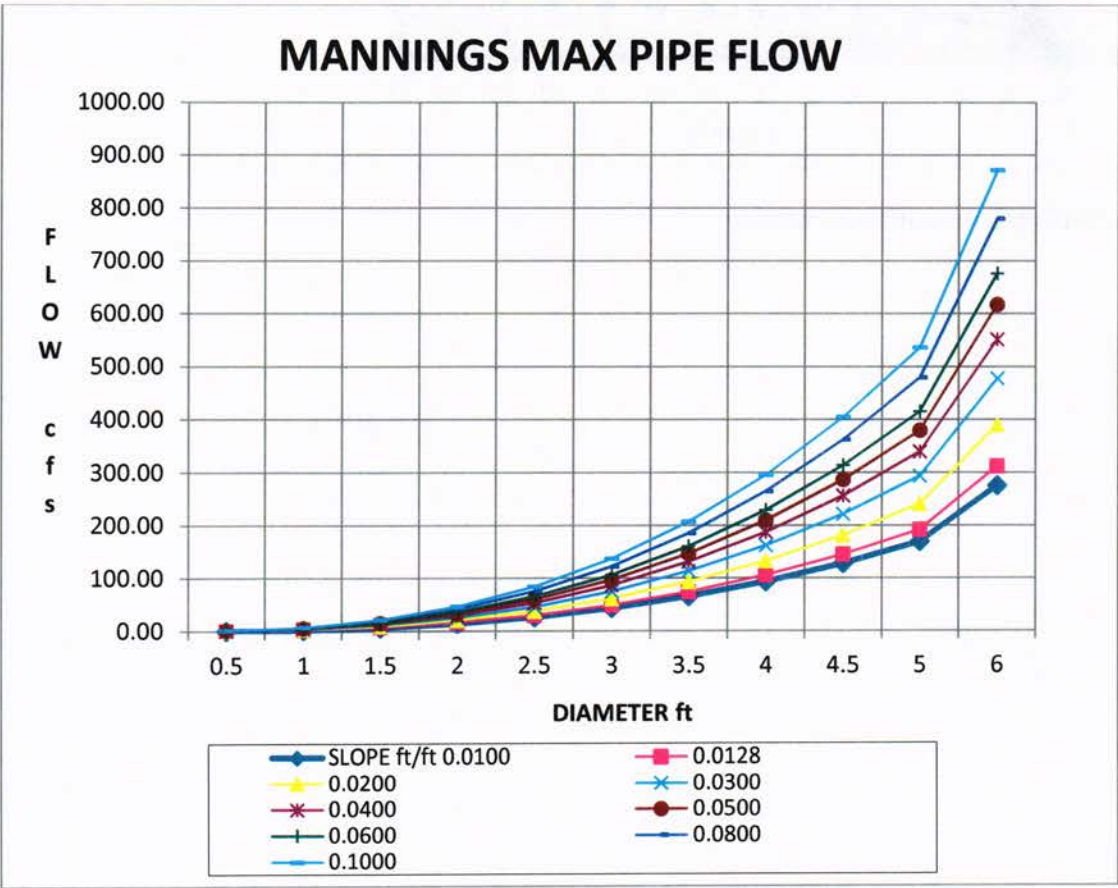
## PIPE - ENTRANCE FLOW - MCL



7. Outlet Entrance condition capacity

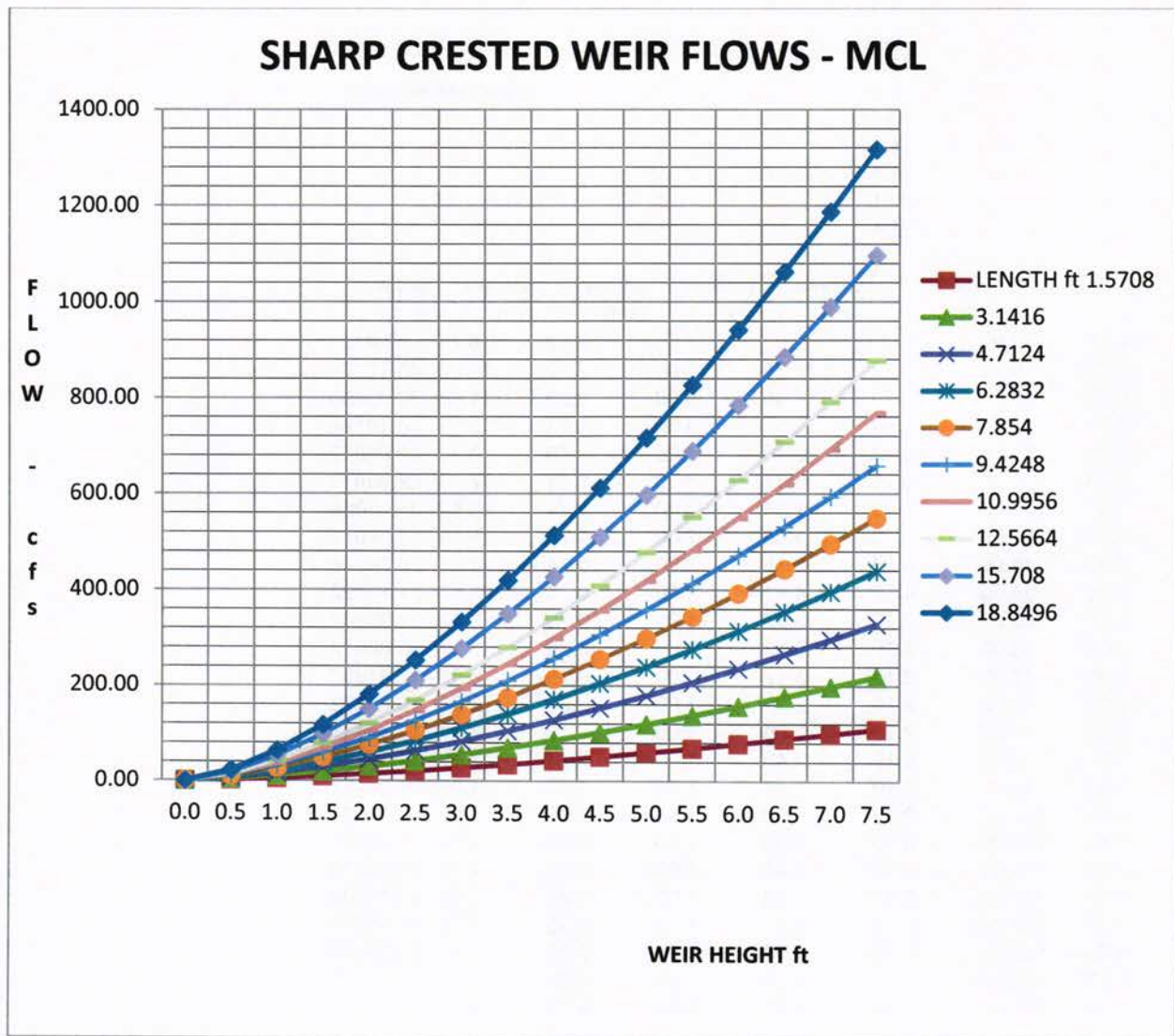


MANNINGS PIPE FLOW CAPACITY CHECK		MCL		10/2/2019							
FLOWING FULL & FREE NORMAL DEPTH		INPUT IN RED		$Q = A \times 1.486/n \times R^{2/3} \times S^{1/2}$							
MANNINGS ROUGHNESS COEFFICIENT		0.0200		0.022							
DIA ft	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	6
AREA sqft	0.19625	<b>0.785</b>	1.76625	3.14	4.90625	7.065	9.61625	12.56	15.89625	19.625	28.26
WET PER ft	1.57	<b>3.14</b>	4.71	6.28	7.85	9.42	10.99	12.56	14.13	15.7	18.84
SLOPE ft/ft	FLOW cfs										
0.0100	0.37	<b>2.32</b>	6.84	14.73	26.72	43.44	65.54	93.57	128.11	169.67	275.92
0.0150	0.45	<b>2.84</b>	8.38	18.04	32.72	53.21	80.27	114.60	156.90	207.80	337.93
0.0200	0.52	<b>3.28</b>	9.67	20.84	37.78	61.44	92.68	132.33	181.17	239.95	390.21
0.0300	0.63	<b>4.02</b>	11.85	25.52	46.27	75.25	113.51	162.07	221.89	293.88	477.91
0.0400	0.73	<b>4.64</b>	13.68	29.47	53.43	86.89	131.07	187.14	256.21	339.34	551.84
0.0500	0.82	<b>5.19</b>	15.30	32.94	59.74	97.14	146.54	209.23	286.45	379.39	616.97
0.0600	0.89	<b>5.68</b>	16.76	36.09	65.44	106.42	160.53	229.20	313.79	415.60	675.86
0.0800	1.03	<b>6.56</b>	19.35	41.67	75.56	122.88	185.36	264.66	362.34	479.90	780.42
0.1000	1.16	<b>7.34</b>	21.63	46.59	84.48	137.38	207.24	295.90	405.11	536.54	872.53



8. Outlet pipe capacity

DROP INLET WEIR CAPACITY CALCS			MCL		10/2/2019							
			INPUT IN RED		$Q = C \times l \times h^{3/2}$							
WEIR COEFFICIENT	3.4		START	0								
			INCREMENT	0.5								
EQ DIA ft	0.5	1	1.5	2	2.5	3	3.5	4	5	6	7	
LENGTH ft	1.5708	3.1416	4.7124	6.2832	7.854	9.4248	10.9956	12.5664	15.708	18.8496	21.9912	
HEIGHT ft	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	FLOW cfs	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.50	1.89	3.78	5.66	7.55	9.44	11.33	13.22	15.11	18.88	22.66	26.44	
1.00	5.34	10.68	16.02	21.36	26.70	32.04	37.39	42.73	53.41	64.09	74.77	
1.50	9.81	19.62	29.43	39.25	49.06	58.87	68.68	78.49	98.12	117.74	137.36	
2.00	15.11	30.21	45.32	60.42	75.53	90.64	105.74	120.85	151.06	181.27	211.48	
2.50	21.11	42.22	63.33	84.44	105.56	126.67	147.78	168.89	211.11	253.33	295.55	
3.00	27.75	55.50	83.25	111.00	138.76	166.51	194.26	222.01	277.51	333.01	388.52	



9. Spillway capacity

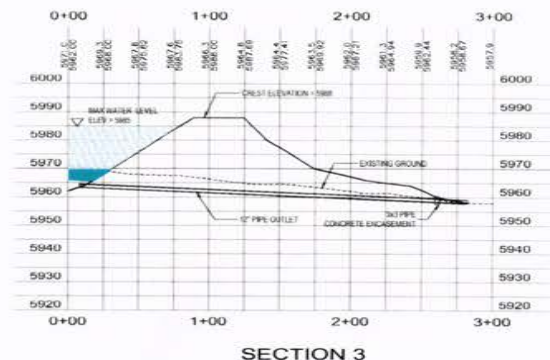
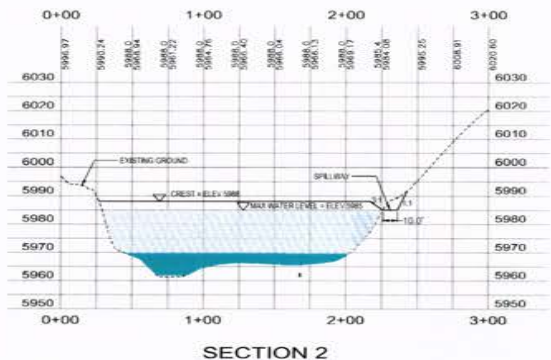
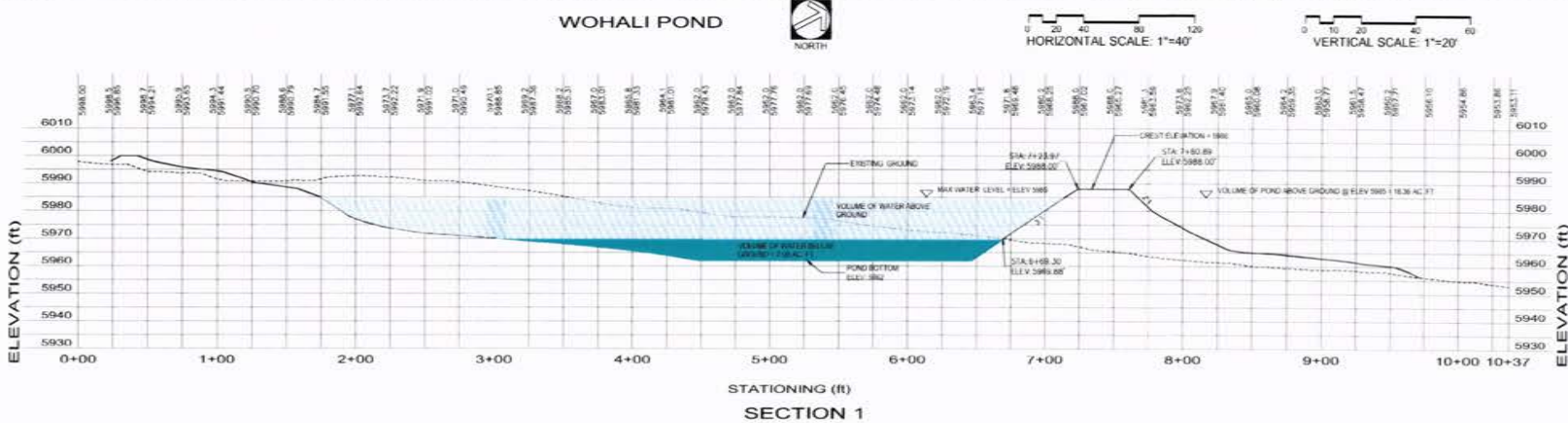
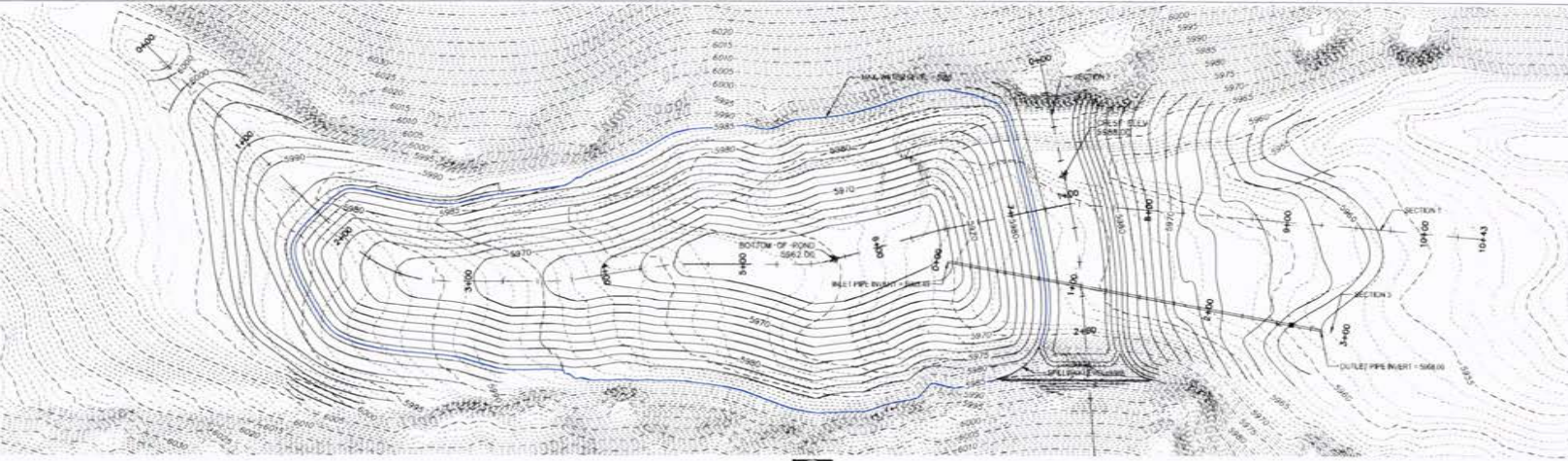


stage storage		MATT LINDON, PE		10/2/19	
time to empty		Wohali Dam			
mcl		input red			
time interval hrs		6			
ave inflow		0.5			
elev feet	head feet	volume in ac ft	flow cfs		
0.00	0.1	0	1		
2.00	2.1	2	1		
3.00	3.1	3	1		
4.00	4.1	4	2		
5.00	5.1	5	2		
6.00	6.1	6	2		
7.00	7.1	7	3		
8.00	8.1	8	3		
9.00	9.1	9	3		
10.00	10.1	10	4		
11.00	11.1	11	4		
12.00	12.1	12	4		erase cells not used
13.00	13.1	13	5		
14.00	14.1	14	5		
15.00	15.1	15	6		
20.00	20.1	20	7		
25.00	25.1	30	8		

day	hour	head ft	volume ac ft	outflow cfs	vol lost ac ft	new vol ac ft	% full %
0.00	0.00	20.00	20.00	7.00	3.22	16.78	83.9125
0.25	6.00	15.10	16.78	6.00	2.72	14.06	83.77774
0.50	12.00	14.10	14.06	5.00	2.23	11.83	70.50499
0.75	18.00	11.10	11.83	4.00	1.73	10.10	60.18174
1.00	24.00	10.10	10.10	4.00	1.73	8.37	49.85848
1.25	30.00	8.10	8.37	3.00	1.24	7.13	42.48473
1.50	36.00	7.10	7.13	3.00	1.24	5.89	35.11098
1.75	42.00	5.10	5.89	2.00	0.74	5.15	30.68673
2.00	48.00	5.10	5.15	2.00	0.74	4.41	26.26248
2.25	54.00	4.10	4.41	2.00	0.74	3.67	21.83822
2.50	60.00	3.10	3.67	1.00	0.25	3.42	20.36347
2.75	66.00	3.10	3.42	1.00	0.25	3.17	18.88872
3.00	72.00	3.10	3.17	1.00	0.25	2.92	17.41397
3.25	78.00	2.10	2.92	1.00	0.25	2.68	15.93922
3.50	84.00	2.10	2.68	1.00	0.25	2.43	14.46447
3.75	90.00	2.10	2.43	1.00	0.25	2.18	12.98972
4.00	96.00	2.10	2.18	1.00	0.25	1.93	11.51497
4.25	102.00	0.10	1.93	1.00	0.25	1.69	10.04022
4.50	108.00	0.10	1.69	1.00	0.25	1.44	8.56547
4.75	114.00	0.10	1.44	1.00	0.25	1.19	7.090719
5.00	120.00	0.10	1.19	1.00	0.25	0.94	5.615969
5.25	126.00	0.10	0.94	1.00	0.25	0.70	4.141219
5.50	132.00	0.10	0.70	1.00	0.25	0.45	2.666468
5.75	138.00	0.10	0.45	1.00	0.25	0.20	1.191718
6.00	144.00	0.10	0.20	1.00	0.25	-0.05	-0.28303

10. Time to Drain calculations



**WOHALI**

PRELIMINARY PLAN SUBMITTAL - PHASE 1

WOHALI DEVELOPMENT SOLUTIONS

LDG

DATE: JANUARY 15, 2020

DESIGNER BY: KLR

DRAWN BY: BRG

REVIEW BY:

PROJECT NO: WOHALI 1

ISSUE: PHASE 1

REVISIONS:

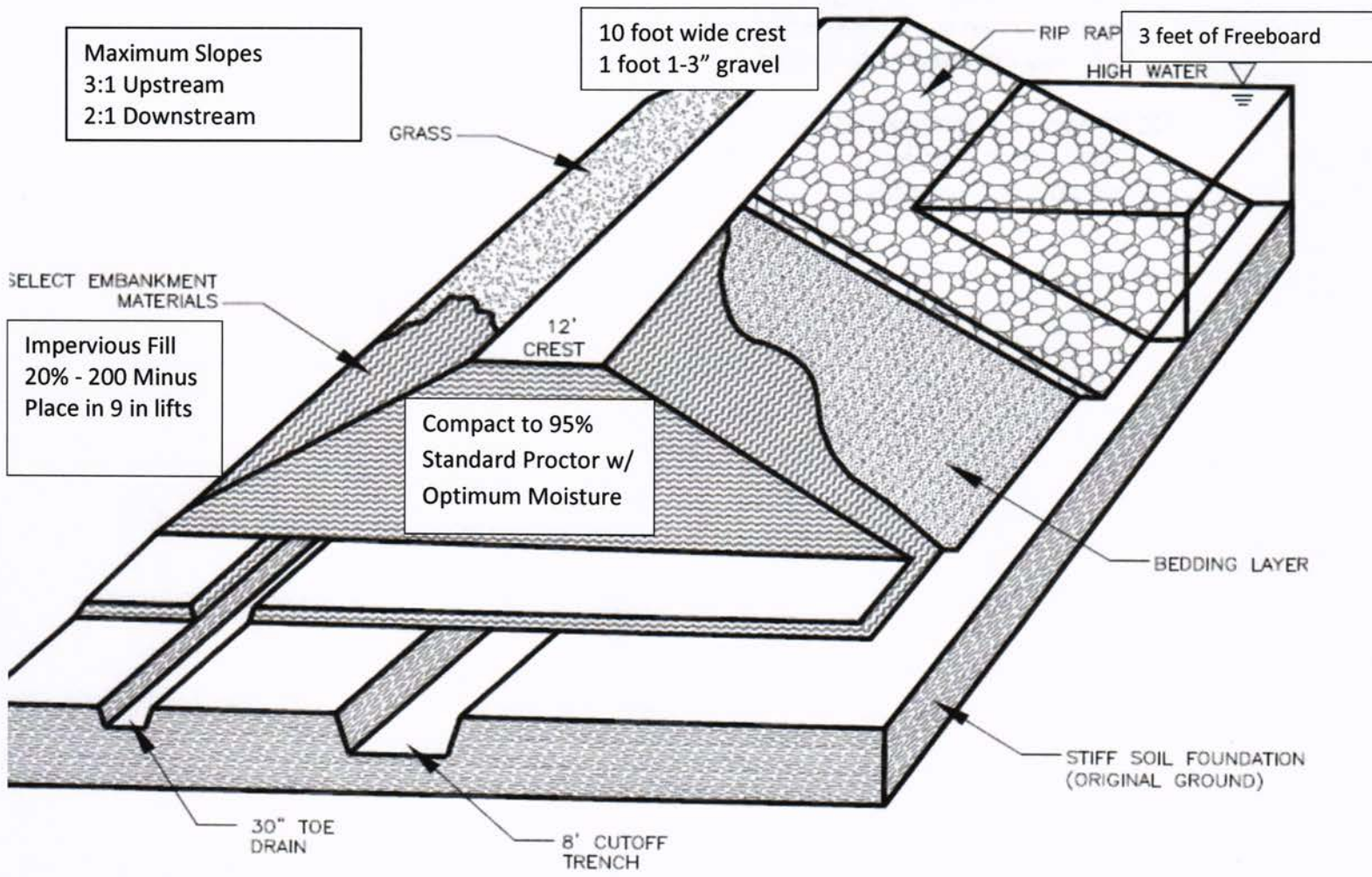
SHEET TITLE: WOHALI POND PLAN AND SECTIONS

SHEET NUMBER: C401

ICV SPRINGS ROAD  
COALVILLE CITY, UT 84017

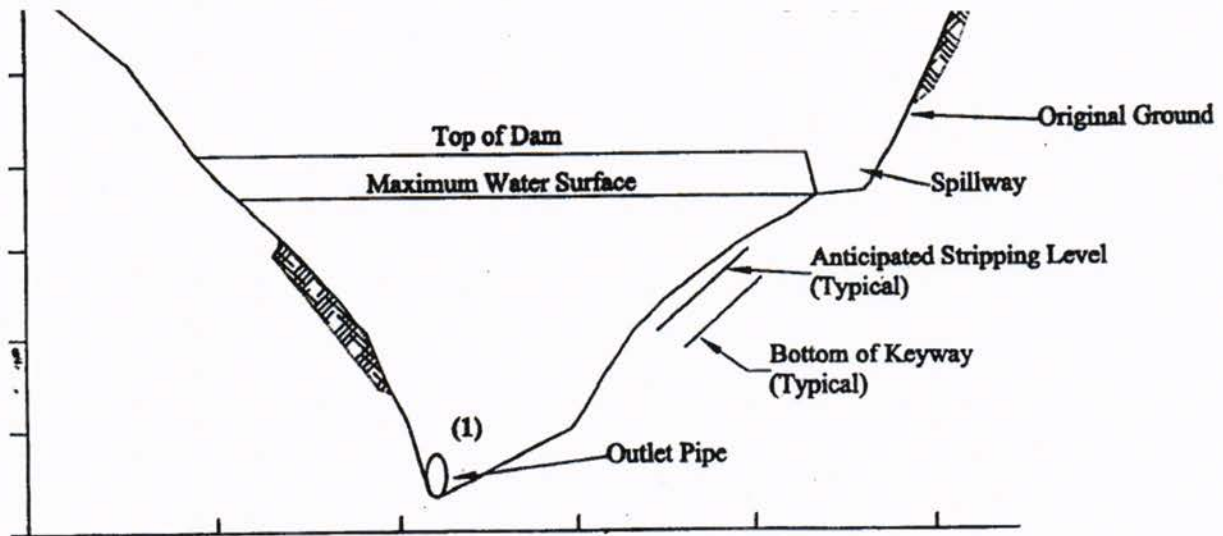
PATH: C:\Users\kclawson\OneDrive\Documents\Projects\WOHALI\WOHALI\_1.dwg  
 USER: kclawson  
 DATE: 1/15/2020 10:48:11 AM  
 PLOT: 1/15/2020 10:48:11 AM  
 PLOTTER: HP DesignJet T1100e



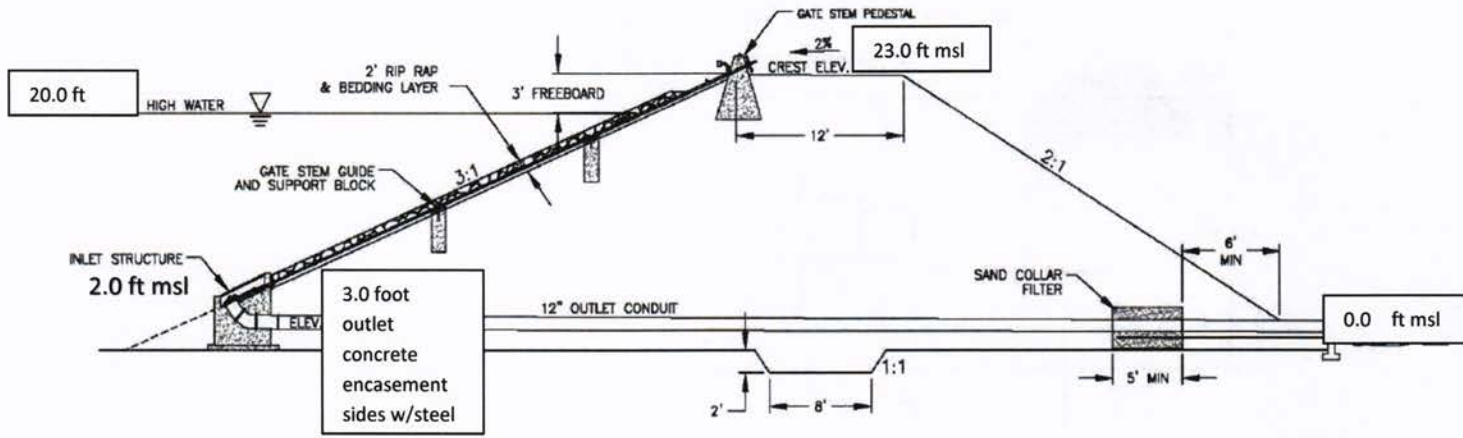


**ISOMETRIC VIEW OF HOMOGENEOUS EARTH DAM**  
 NOT TO SCALE

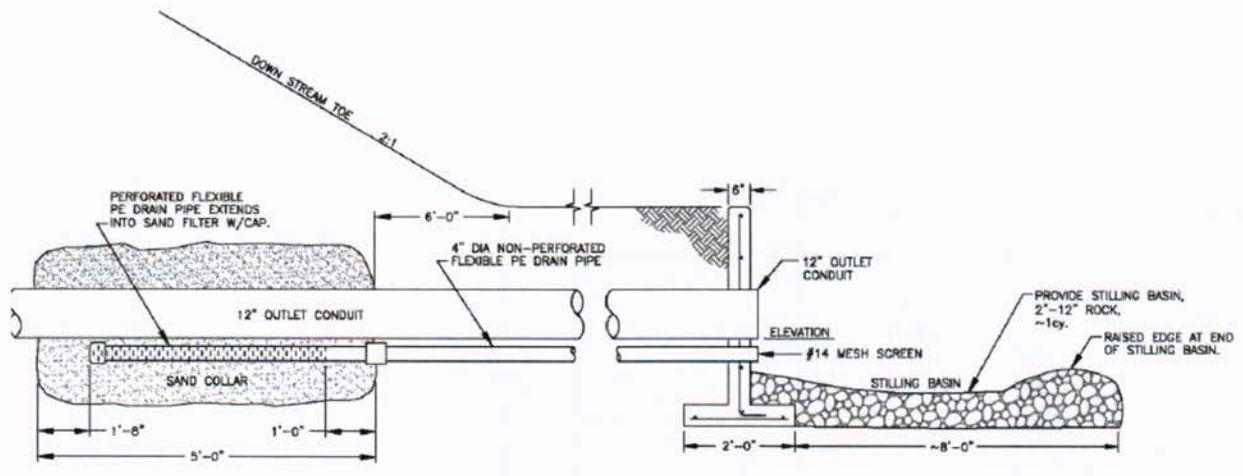




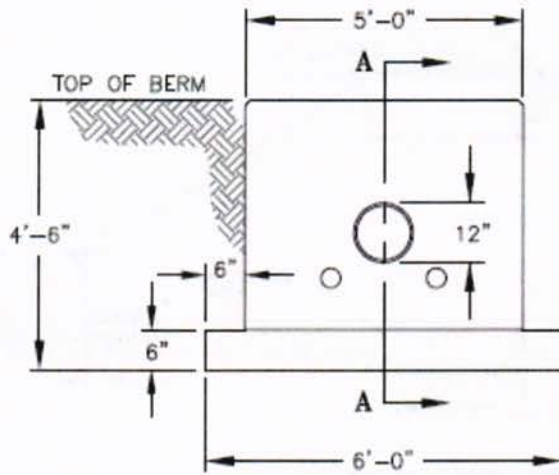
- (1) Dam is to be built of moisture conditioned silty clays (CL) placed in 9" lift and compacted by 8 passes of a sheeps foot roller.
- (2) Remove all vegetation and organic material under dam prior to placing fill.



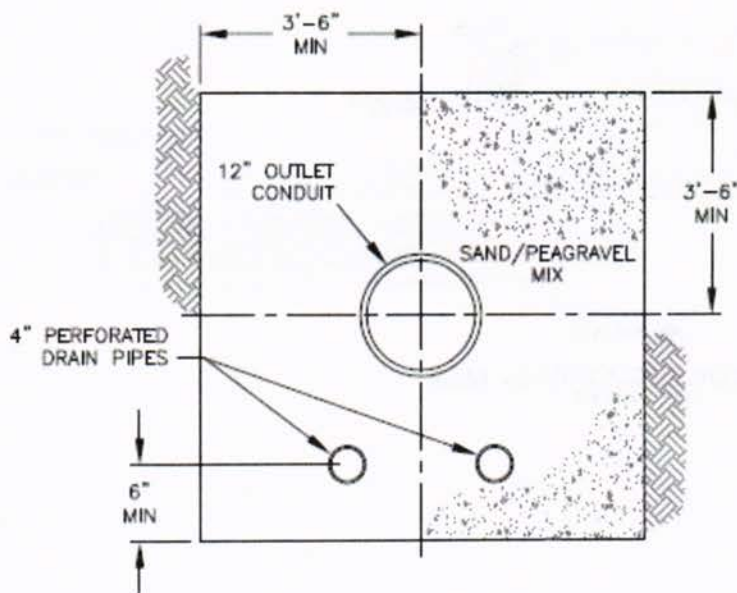
**CROSS-SECTION OF DAM  
THROUGH OUTLET CONDUIT  
NOT TO SCALE**



**SECTION A-A  
SAND COLLAR FILTER/STILLING BASIN  
NOT TO SCALE**

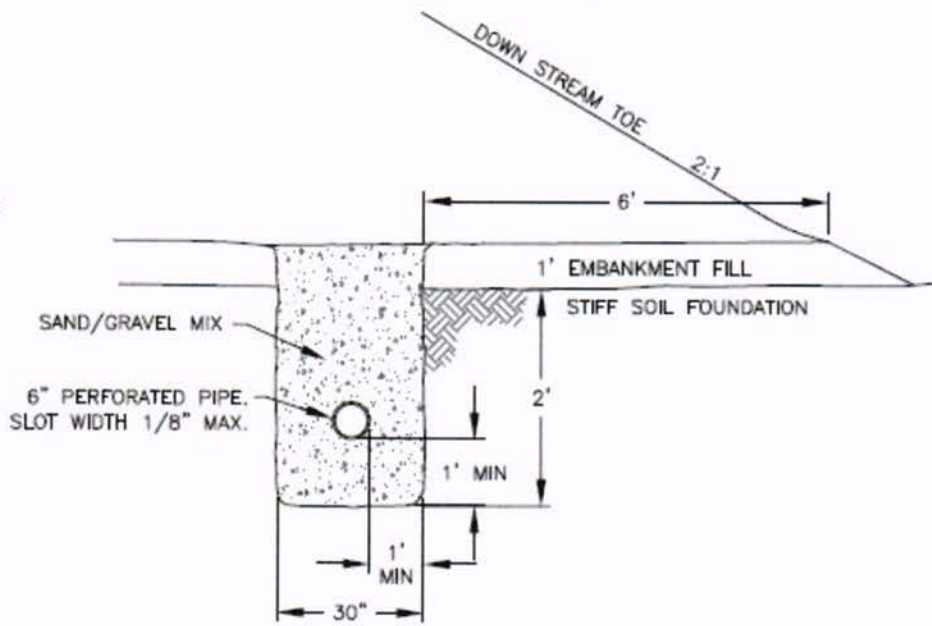


**OUTLET HEADWALL**  
 SCALE: 1/4" = 1'

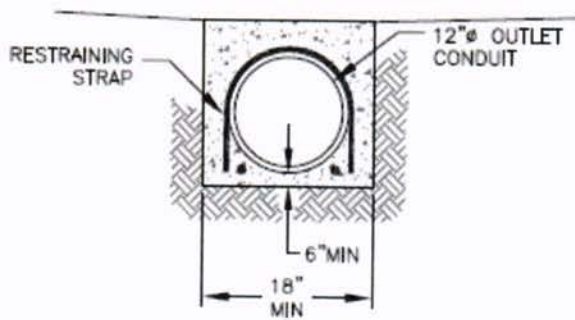


**SAND FILTER CROSS-SECTION**  
 NOT TO SCALE





**TOE DRAIN CROSS SECTION**  
NOT TO SCALE



**OUTLET CONCRETE ENCASEMENT**  
NOT TO SCALE

11. Sample Dam Details