

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 63-33691

Exam Date: 7/17/2015

1. Current Owner:
THE CLUB AT SPURWING LLC 3405 E OVERLAND RD STE 150 MERIDIAN ID 83642 (208)322-7300

2. Accompanied by: Jerry Palmerton – Grounds Superintendent

Phone No: 208-887-0040

Address: 6800 North Spurwing Way, meridian ID 83642

Relationship to Permit Holder: Employee

3. SOURCE: GROUND WATER**B. OVERLAP REVIEW**

1. Other water rights with the same place of use: Water right 63-31860 owned by the Club at Spurwing for Irrigation use is diverted from the same well into pond #1 covered under this permit. Water right 63-10572 owned by Spurwing LTD Partnership for Irrigation and Commercial is diverted into pond #3. Surface water from Settlers Irrigation District overlaps the place of use. A list of other water rights overlapping the QQs listed on the place of use for this permit are included in the attached overlap analysis report.

2. Other water rights with the same point-of-diversion: Water right 63-31860 owned by the Club at Spurwing for Irrigation is diverted from the same POD as this permit. Water right 63-34091 owned by Knighthill LLC for Irrigation is a split from 63-31860. Water right 63-34091 lists the same POD as 63-31860 which is the same POD as permit 63-33691. See attached overlap analysis for other non-direct overlaps.

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER SW¼SE¼ Sec. 23, Twp 04N, Rge 01W, B.M. ADA County

Method of Determination:

2. Visual and GPS downloaded location

PLACE OF USE: AESTHETIC STORAGE

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
04N	01W	23												X			X	X	

DIVERSION TO STORAGE same as AESTHETIC STORAGE

Method of Determination:

3. Delivery System Diagram Attached (required). Indicate all major components and distances between components.

X Indicate weir size/pipe as applicable.

X Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.

X Aerial Photo Attached (required for irrigation of 10+ acres).

X Photo of Diversion and System Attached

4.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
D0064164	unknown	10		Franklin Electric	Model 2396018521

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
See below						

2. Measurements: Water from the well was diverted into pond #1 through a concrete weir. Measurements were taken of the concrete constricting box along with the water levels before and after water passed through the opening of the weir. In house calculations were done for a submerged broadcrested weir. The constricted opening was 1' wide and 0.5' long. The water level before the weir was .52' deep and after was 0.2' deep.

A calculation was done in house with the assistance of IDWR staff Corbin Knowles and Dan Nelson to determine the flow rate through the weir. A corrected formula for a submerged broadcrested weir was used with the following formula; $Q = 2.64 L H^{3/2}$ with L the length of the weir and h being the head. $Q = 2.64 (1') (.52')^{3/2}$ **Q = .9899 cfs = 444 gpm.**

A second calculation was made with the field measurements; $Q = 3.33 L H^{3/2}$ with the Head at .3 and Q was determined as **0.99 cfs = 444 gpm.**

In another attempt to confirm rate and volume of water being supplied by the pump, Rob Whitney from Water Compliance contacted Coonse Drilling. Coonse Drilling was the drilling company that drilled the well and installed the pump. Information provided from Coonse Drilling stated that the pump had an open discharge without piping of approximately 420 gpm. They also stated that after piping to the water to the pond, volume was approximately 400 gpm. 400 gpm = .89 cfs

E. FLOW CALCULATIONS X Additional Computation Sheets Attached

Measured Method: 0.99 cfs

Permit allows: 0.89 cfs

Theoretical pump flow (see attached): 0.92 cfs

Recommended Diversion to Storage rate: 0.89 cfs*

*Condition with overlapping PODs (63-31860 and 63-34091) limiting the total diversion from this POD to 0.99 cfs

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: N/A

 $V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$ $V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$ $V = \text{Smaller of } V_{IR} \text{ and } V_{DR} =$

2. Volume Calculations for Other Uses:

6.2 surface acres for three ponds x average dept of 4.8' (12' x 0.4 = 4.8) = 29.8 AF Pond capacity

Evaporative losses determined from IDWR pond spreadsheet (see attached) = 15.3 AF

Total Volume 29.8 AF+ 15.3 AF = 45.1 AF

G. NARRATIVE/REMARKS/COMMENTS

Permit 63-33691 is for the use of ground water at three ponds for diversion to storage and aesthetic storage at the Club at SpurWing in Meridian ID. Jerry Palmerton, the grounds superintendent at the Club at SpurWing, escorted IDWR staff members Dan Nelson and Steven Visosky around the three ponds on 07-17-2015. On our visit, Jerry described how the surface water, ground water, and irrigation water was pumped, stored, entered and exited all three ponds. There are two overlapping water rights for the 3 ponds that will be described in detail along with canal shares that are utilized in the three lakes.

For reference in describing the system, the following pond numbers will be used. Pond #1 refers to the pond on the south east side of the property that is east of Long Lake Way and closest to West Chinden Blvd. Pond #2 refers to the pond also on the east side of Long Lake Way but is north of pond #1 and north of Three Lakes Dr. Pond # 3 refers to the pond west of Long Lake Way.

Water for this permit 63-33691 has a point of diversion from a well south of pond #1. Water is pumped from the well into a concrete structure that has multiple head gates that allow for water diversions. This diversion area allows canal water that comes from the south side of Chinden Blvd through the "North Slough" canal to be properly diverted either to pond #1 or to continue through the property. In this diversion area, if the water from the "North Slough" canal is not diverted into pond #1, it passes through to connect to the "Phyllis" canal which goes through to the north side of the property. The Club is the end users of the "North Slough". For our exam, we first saw pond # 1 being supplied by "North Slough" canal water, then the canal water was diverted to pass through to the "Phyllis", the pump in the well was turned on, and pond #1 was supplied only by well water. This well (the source of water for permit 63-33691), is also the source for irrigation right 63-31860. Irrigation right 63-31860 is for irrigation of 53 acres and is supplemental to the use of the canal water. Water right 63-34091 is split from 63-31860 and also lists this well as a POD. The POU of 63-34091 is on the south side of Chinden Blvd and does not overlap this permit's POU. In summary, the same well is used for water right 63-31860, 63-34091, and permit 63-33691. The well is used at different times of the year depending upon canal water availability. Irrigation water for water right 63-31860 is pumped from pond #1.

Overflow water flows from pond #1 to pond #2 and then into pond #3. Overflow from pond #3 flows to the other side of the golf course which is tied to the "Phyllis" canal. Pond #3 is in a direct overlap with the POU of water right 63-10572. Water right 63-10572 is for Irrigation and Commercial Use and is pumped from a well on the west side of Long Lake Way into pond #3. Water from 63-10572 then passes through pond #3 to the other side of the golf course where it eventually is pumped for irrigation and commercial uses.

We were told by Jerry Palmerton that all three ponds were lined with a liner and the ponds were constructed with a safety shelf. That safety shelf is a gradual bench in the lake before it gets too deep as to protect a golf carts or maintenance equipment in case an accident happened along the edge of the lake. Information and maps submitted by Jerry Palmerton show that the three lakes average 12.0' at the maximum depth.

There was no pipe available to take a flow measurement for this system. A flow rate was obtained from calculations determined from measurements taken in a concrete weir where water entered into pond #1.

Have conditions of permit approval been met? X Yes No

All conditions should be carried over to licensing except for 046 in regards to drilling requirements and 004 in regards to right-of-way. Condition x35 should be added to address the limit of the well to 0.99 cfs as this well is the POD of three water rights (63-33691, 63-31860, and 63-34091). None of the three water rights have a diversion rate alone higher than the limiting rate.

H. RECOMMENDATIONS**1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
DIVERSION TO STORAGE	01/01 to 12/31	0.89 CFS	
AESTHETIC STORAGE	01/01 to 12/31		45.1 AF
	<u>Totals:</u>	0.890 CFS	45.1 AF

2. Recommended Amendments

____ Change P.D. as reflected above ____ Add P.D. as reflected above X None

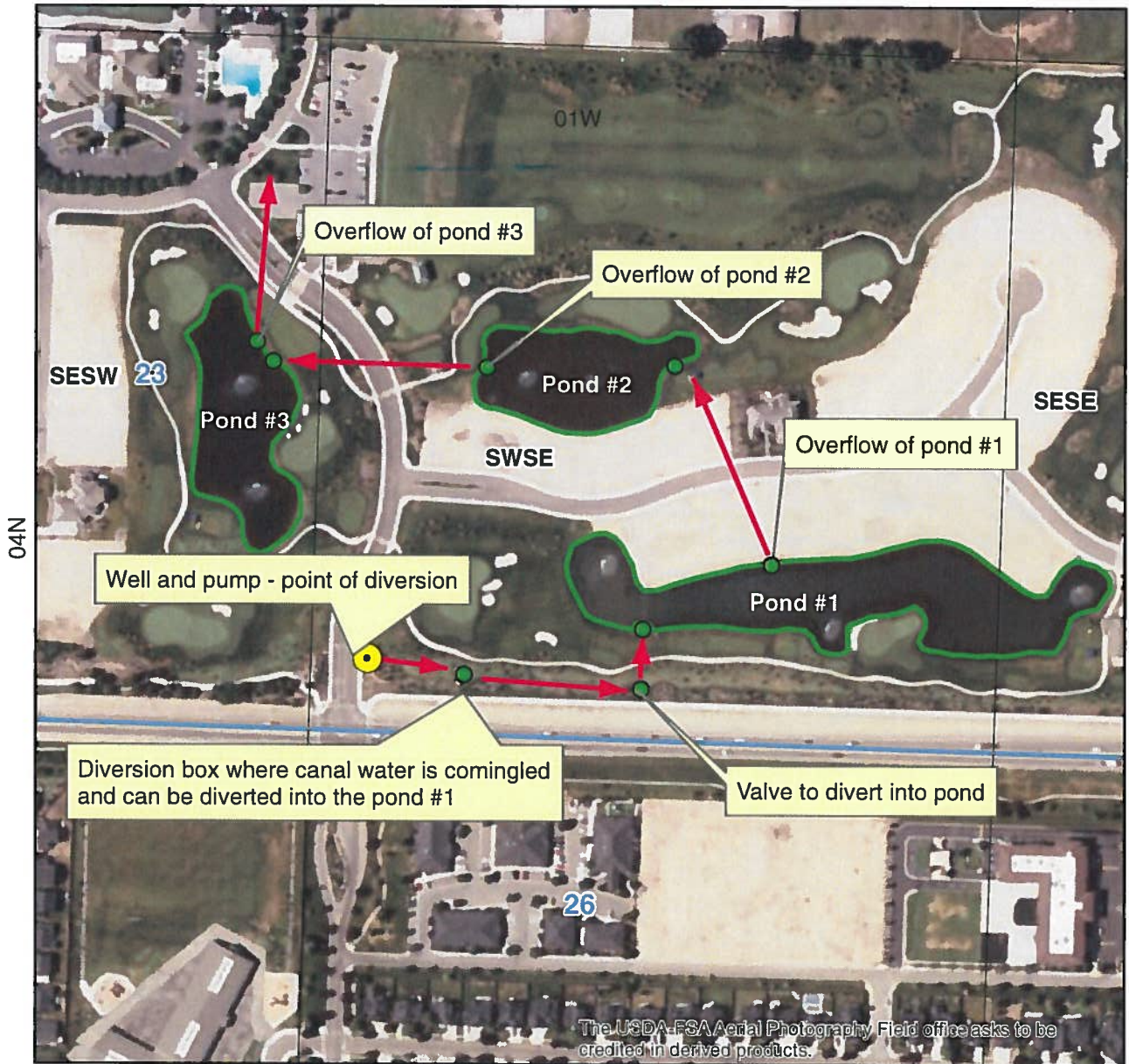
____ Change P.U. as reflected above ____ Add P.U. as reflected above X None

I. AUTHENTICATION

Field Examiner's Name  Steven Visosky Date 7-12-2016

Reviewer _____ Date _____

Diagram of water flow through the three ponds associated with permit 63-33691. Map created by Steven Visosky 6-2-2016



- Townships
- PLS Sections
- Place_of_Use_for_Permit_63-33691
- Point of Diversion

0 0.04 0.08 0.16 Miles



Evaporation Loss Calculations

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the annual evaporation losses from a pond.

FILE NUMBER	63-33691
REVIEWER	Steven Visosky
DATE	6/1/2016

User Input
Calculated value
Formula Explanations

The acronyms used on the Kimberly Research Center website are defined below:

P = Precipitation
ET= Evapotranspiration
P _d = Precipitation deficit
P _d =ET-P

USING THIS SPREADSHEET

Use the link below to access the Kimberly Research Center website. This website provides the Precipitation Deficit for a station most representative of the pond under examination. The Precipitation Deficit is the total amount of free water surface evaporation minus the precipitation for a given area, which gives the total amount of evaporative losses incurred by the pond. There are several weather sites that are used throughout the state. IDWR staff can find the nearest site using Arc Map. The shape file containing the sites can be found at <X:/Spatial/Climate/ETIdahostations.shp>.

Instructions:

1. Use the link below to navigate to ET Idaho 2012.
2. Select the station which is most representative to your pond location.
3. Click Submit Query.
4. Under "Land Covers with Evapotranspiration Estimates," select "Open Water - Shallow Systems (ponds, streams)" or "Open Water - small stock ponds" depending on the pond size.
5. Click the link to "Precipitation Deficit."
6. Reference and copy (ctrl + C) the first subheading "Mean" values.
7. Click the "Paste Values from ET Idaho" button. The table will automatically enter a zero (0) for any negative precipitation deficit values.

Found at: <http://data.kimberly.uidaho.edu/ETIdaho/>

Precipitation Deficit

Station: Nampa (AgriMet -- NMPI)

Month	mm/day ¹	Days per month	mm/Month
Jan	-0.16	31	0.00
Feb	0.51	28	14.28
March	1.53	31	47.43
April	2.26	30	67.80
May	2.79	31	86.49
June	3.68	30	110.40
July	4.81	31	149.11
August	4.24	31	131.44
September	2.87	30	86.10
October	1.56	31	48.36
November	0.44	30	13.20
December	-0.17	31	0.00

PLEASE NOTE: The seasonal average for precipitation deficit should not be used for calculations because precipitation often exceeds evaporation during wetter months of the year. If the pond is kept full, excess precipitation during wetter months does not serve to refill the pond during drier months.

For example, see Sandpoint KSPT (NWS -- 108137), the annual precipitation deficit is -106 mm. However, April through September have positive precipitation deficit values. To properly estimate the annual volume of water necessary to refill a pond due to evaporation losses, the table will automatically enter a zero (0) for each month that the precipitation value is reported as a negative value.

As described above, precipitation offsets evaporation in winter months, so the net effect is that wintertime precipitation deficit is usually zero.

Total mm/year = 754.61

$[(\text{mm/yr}) \div (\text{convert to feet})] \times (\text{Surface area of pond, in acres}) = \text{Evaporation Loss in Acre Feet}$

(754.61 ÷ 304.8) X 6.20 = 15.3 AFA

Flow Rate into Pond (CFS)	0.89	The "Flow Rate into Pond" depicts the actual flow, either measured or estimated, into the pond. For offstream facilities, this will be equivalent to "diversion to storage" rate.
Highest Daily Evaporation Rate From Evaporation Tab. (mm/Day)	4.81	This number is carried over from the "Evaporation Loss" sheet. It is the highest recorded number in the "Precipitation Deficit Table".
Required Daily Maintenance Volume (AF/Day)	0.10	"Required Daily Maintenance Volume" is the maximum volume of water needed on any given day during the year to maintain pond volume. It is calculated by adding the highest daily evaporation loss to the average daily seepage loss in acre feet. The average daily seepage loss is calculated by dividing the "Estimated Seepage Loss" by 365 days. This is acceptable, since the seepage rate shouldn't vary throughout the season unless the pond completely freezes over during the winter months. The highest daily evaporation loss is calculated by dividing the Highest Daily Evaporation Rate by the 304.8 conversion factor and multiplying this number by the pond surface area to attain a combined daily acre feet requirement.
Minimum Maintenance Flow (CFS)	0.05	The "Minimum Maintenance Flow" is the minimum amount of flow required to maintain the level of the pond. This number is determined by dividing the "Maximum Required Daily Maintenance Volume" by 1.9835. This flow can be used to determine if the flow rate into the pond is adequate to maintain the pond level.
Days Required to Fill the Pond	18	The "Days Required to Fill the Pond" is calculated by dividing the "Pond Capacity" by the "Flow Rate" minus "Minimum Maintenance Flow" multiplied by 1.9835. This section will assist you in determining if the flow rate being diverted to the pond is adequate to fill the pond while maintaining the pond level. The length of time to fill the pond will help determine if the flow rate is adequate for the size of pond being proposed. If this number is approximately 6 months (180 days) or more, the reviewer should have a discussion with the applicant to make sure he/she understands that it will take a significant length of time to fill the pond.
Days Required to Fill the Pond at 13,000 Gallons per Day	-514	Some water users may want to fill a pond under the 13,000 gallons per day domestic exemption. The "Days Required to Fill the Pond at 13,000 Gallons per Day" is calculated by converting the "Pond Capacity" and the "Required Daily Maintenance Volume" to gallons. The "Pond Capacity" is then divided by 13,000 gallons minus the "Required Daily Maintenance Volume" in gallons to determine the number of days to fill pond. If this number is approximately 6 months (180 days) or more, the reviewer should have a discussion with the applicant to make sure he/she understands that it will take a significant length of time to fill the pond. Negative values indicate that the supply of 13,000 gallons per day is not enough volume to overcome the required daily maintenance volume; the pond will never fill.

THEORETICAL HORSEPOWER EQUATION WORKSHEET (cjh 1/92)

Water Right No.: 63-33691
 Reviewer: Steven Visosky
 Date of Review: 7/20/2015

P/D No.:	Senerio 1	Senerio 2	Senerio 3	
PUMP HORSEPOWER	10	10	10	
BOOSTER HORSEPOWER	0	0	0	
PUMPING LEVEL	45	45	45	
DISCHARGE PRESSURE	5	10	15	
RATE OF FLOW (cfs)	1.09	0.90	0.77	AVE
(gpm)	488.9	406.0	347.1	0.92
				414.01

The above calculates the formula =

$$Q = \frac{8.8 * (\text{Efficiency}) * \text{hp}}{\text{depth to water} + 2.31 * (\text{psi}) + \text{friction}}$$

Assumptions: %70 efficiency.
 No Friction

Examiners Notes:

Data collected on 7/17/15 during field exam.

We estimated the pumping level at 20 feet below the static water level or 45 feet total lift. In the previous well location (very close proximity) the drillers report stated a drawdown of 20' and this drillers report stated the depth that water was first encountered was 25 feet for a total lift of 45 feet. We estimated the pressure for the open discharge from 5 to 15 psi. We also did a measurement and received information from the well driller stating an approximate diversion rate of 400 to 420 gpm. I think it is reasonable to support the 0.89 cfs capacity allowed by the permit.

POD and POU overlap analysis of Permit 63-33691
By Steven Visosky 6-2-2016

[illegible]

PHOTOGRAPHER AND DATE OF PHOTOS – STEVEN VISOSKY 7-17-2015

FILE NUMBER 63-33691

*Please note that date of the exam was 7-17-2015, not 7-16-2015 as shown on the photos



Well head
of Point of
Diversion
for Permit
63-33691
located on
the east
side of the
entrance



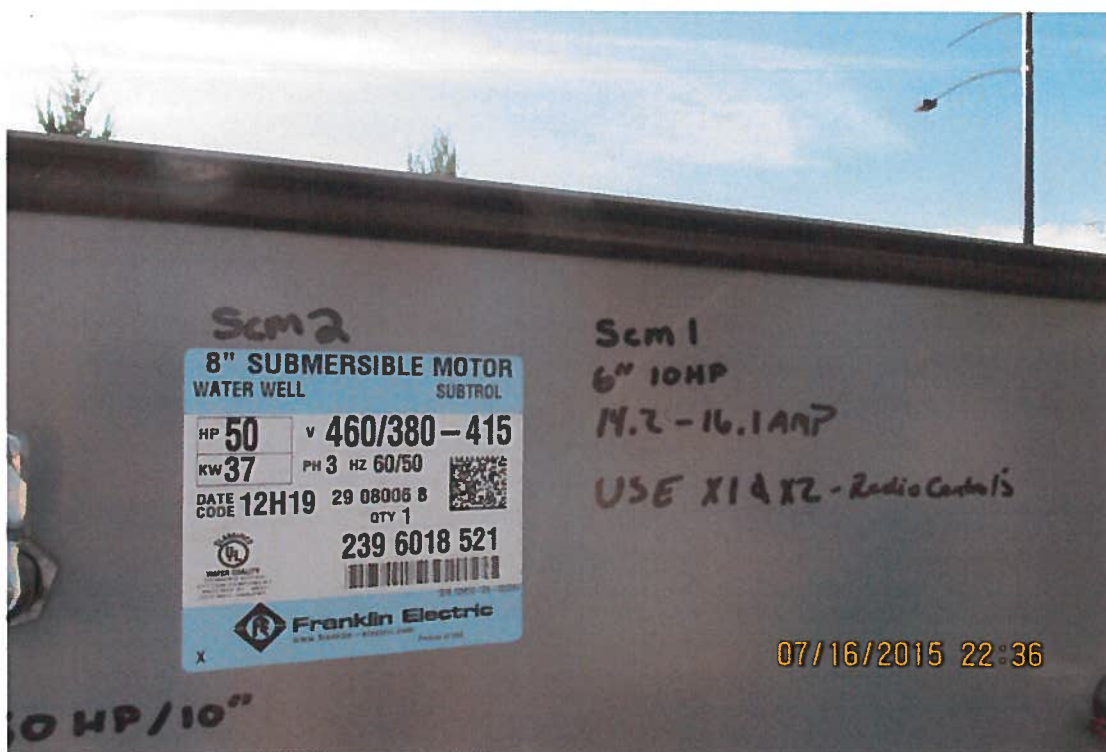
A view of the well
head looking
south towards
Chinden Blvd.

PHOTOGRAPHER AND DATE OF PHOTOS – STEVEN VISOSKY 7-17-2015
FILE NUMBER 63-33691



D Tag on well head (D0064164) of well used for the fill up of lake #1

07/16/2015 22:32



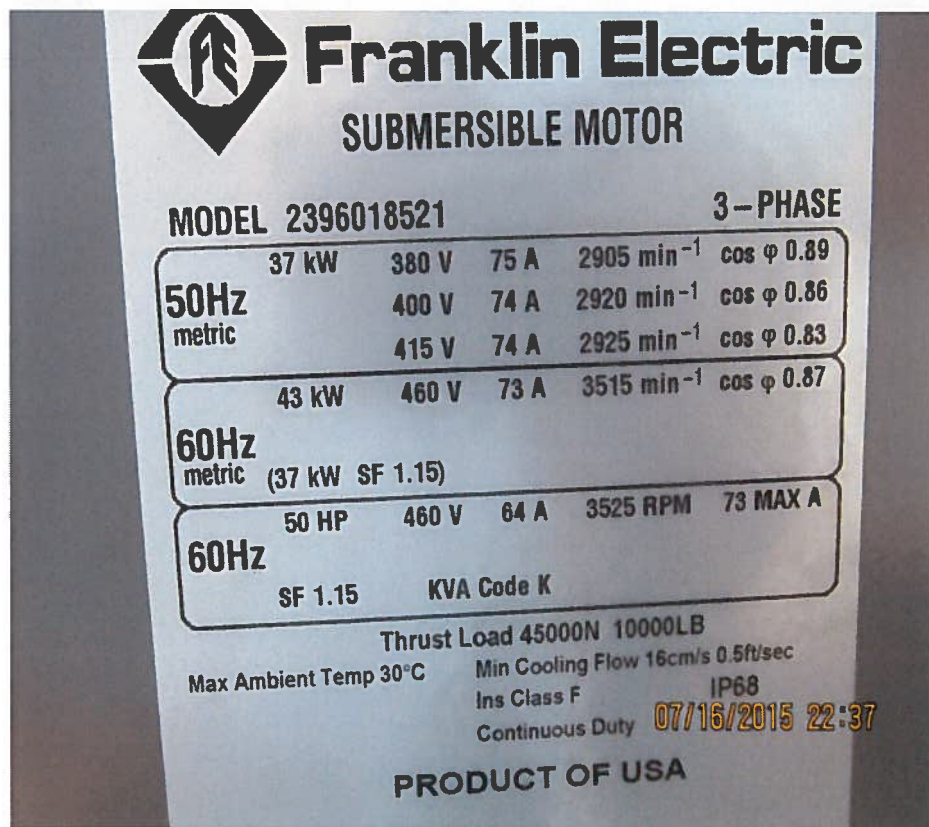
Information about pump motor on the inside panel of control panel.

07/16/2015 22:36

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 FILE NUMBER 63-33691



There is a second pump associated with this control panel that also diverts into pond #3. This well and pump could be an added POD to this permit (an amendment would be required) but it would only fill pond #3.

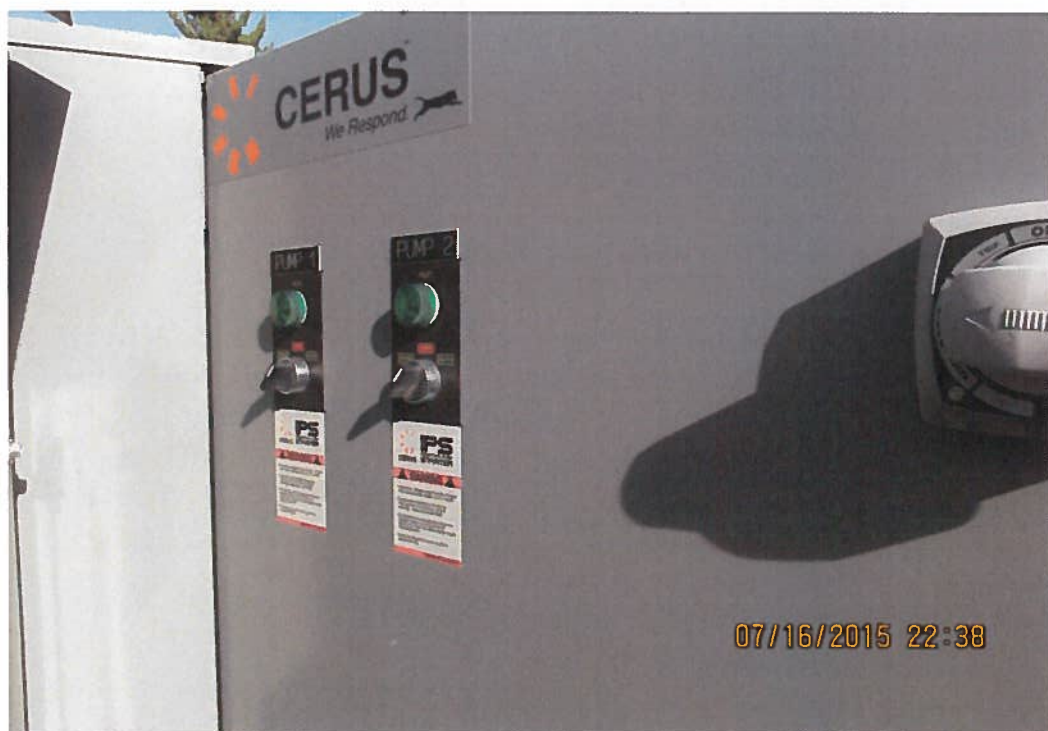


Pump specs of pump used for filling pond #1 under this permit

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The inside of the control panel for the pump used in this permit along with a second pump that could be used to divert to pond #3.



Control panel with switches for two pumps

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A view of the location of the control panel for the pump with Chinden Blvd in the background.



A view of Pond #3 from the general area of the control panel for the pump. The view is to the north west.

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A view from the
east side of pond
#3 looking south

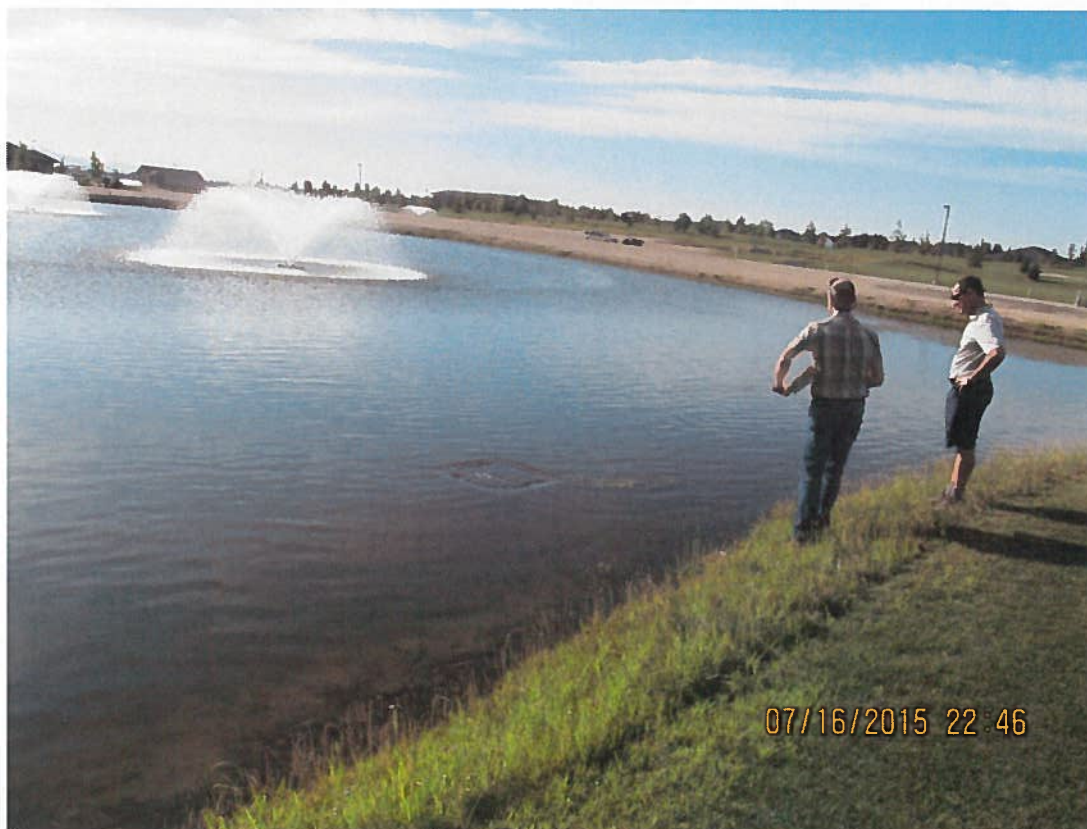


A view of the
pond fill into
pond #3 which is
water that just
came from pond
#2 overflow.

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A view of the overflow of pond #3 with the pond fill of pond #3 in the background right of the red stake.



A view of pond #2 overflow

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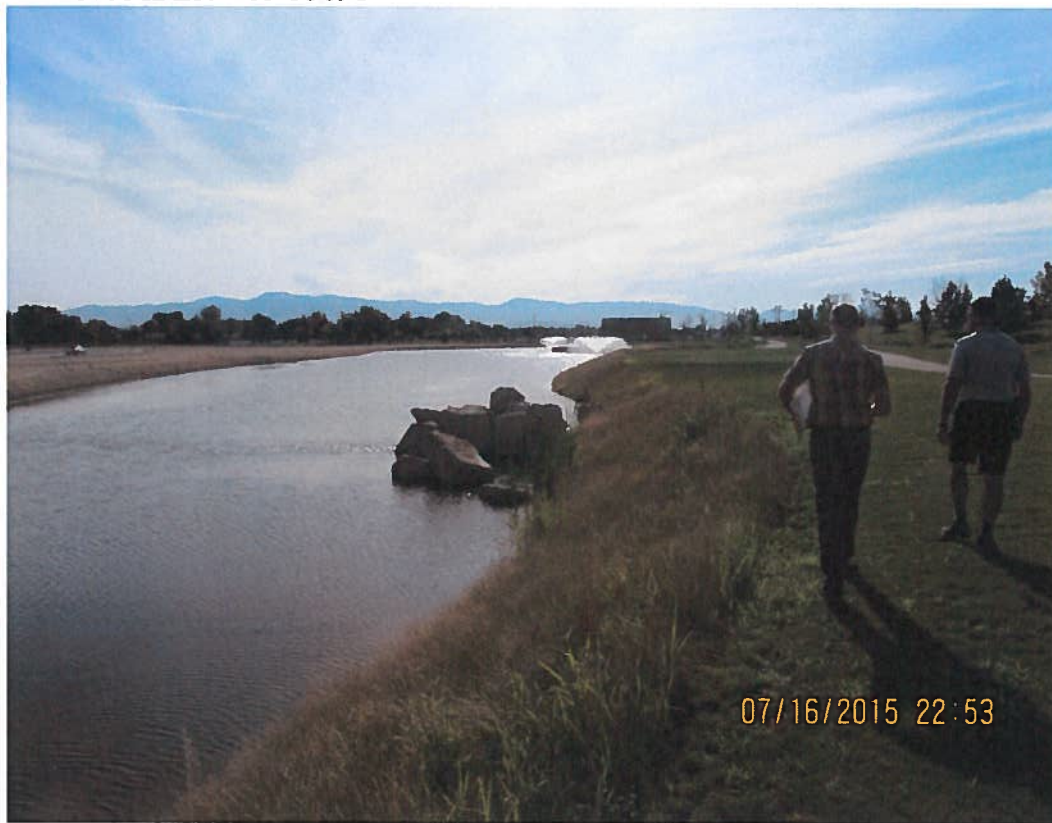


A view of pond #2 with the pond fill visible in the concrete structure in the background on the other side of the pond.



A view of the overflow from pond #1. This water travels in a pipe to pond #2.

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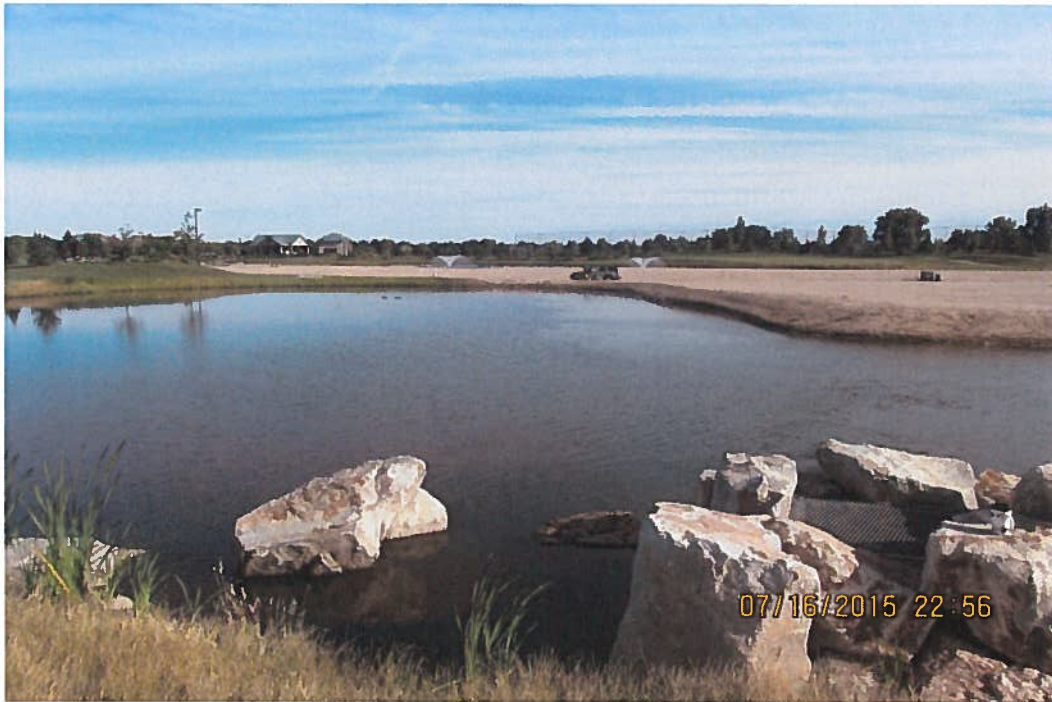


A view of pond #1 looking north east. The rock structure is where pond #1 is filled up.

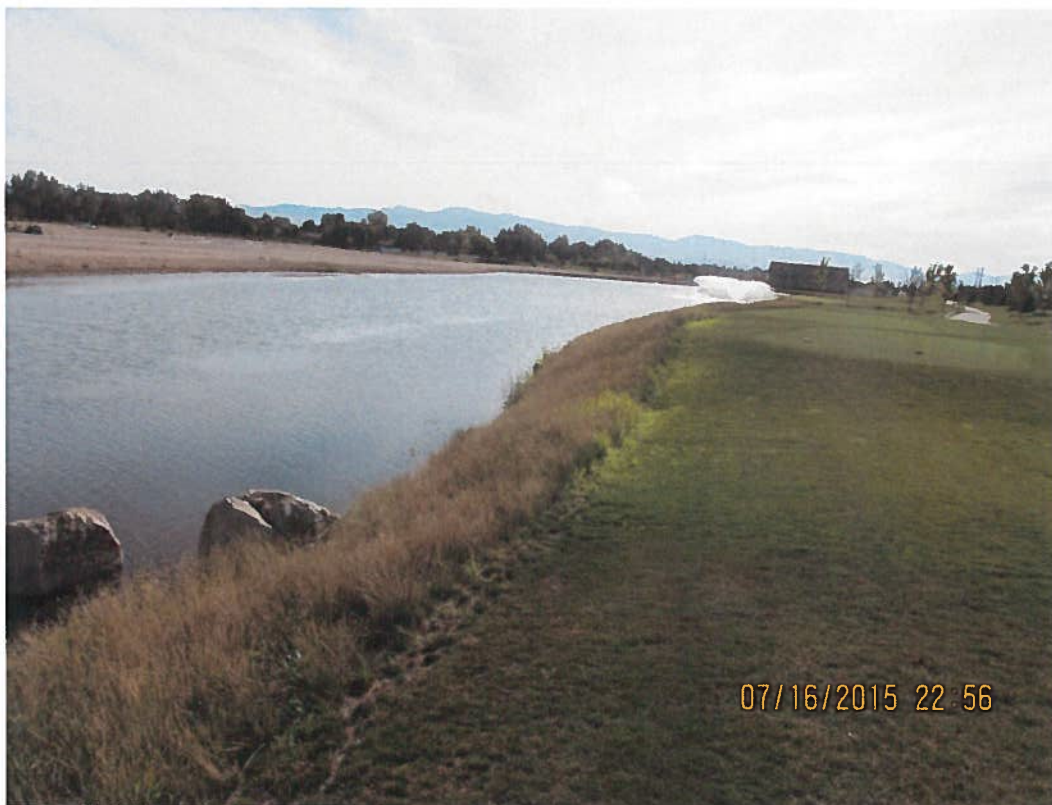


The concrete structure where water enters into pond #1.

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A view of
looking west of
pond #1 with the
concrete
structure where
water enters into
the pond in the
foreground.



A view of pond
#1 looking
north east.

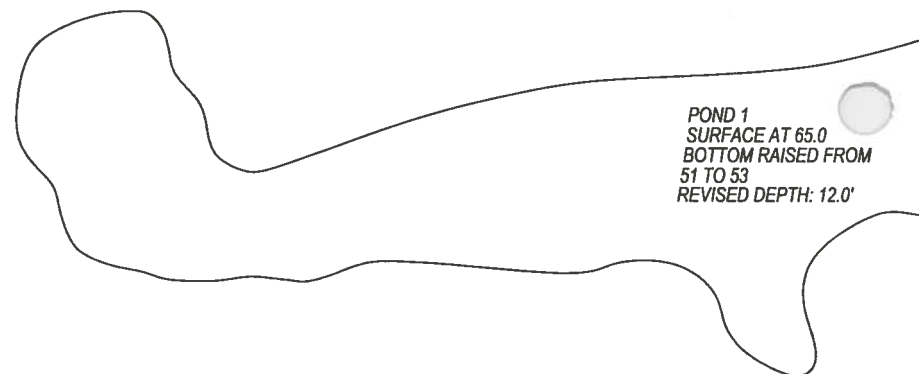
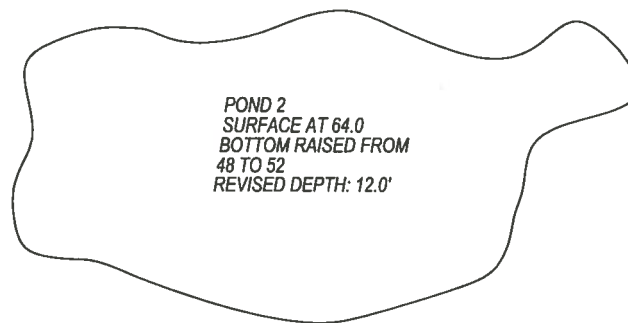
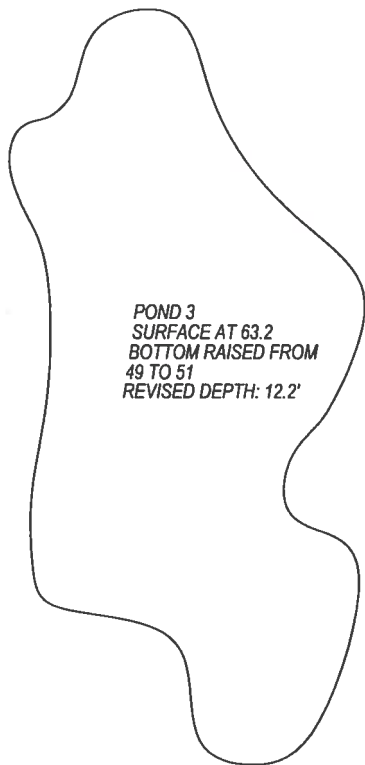
Total Storage Calculations

FILE NUMBER	63-33691
REVIEWER	Steven Visosky
DATE	6/1/2017

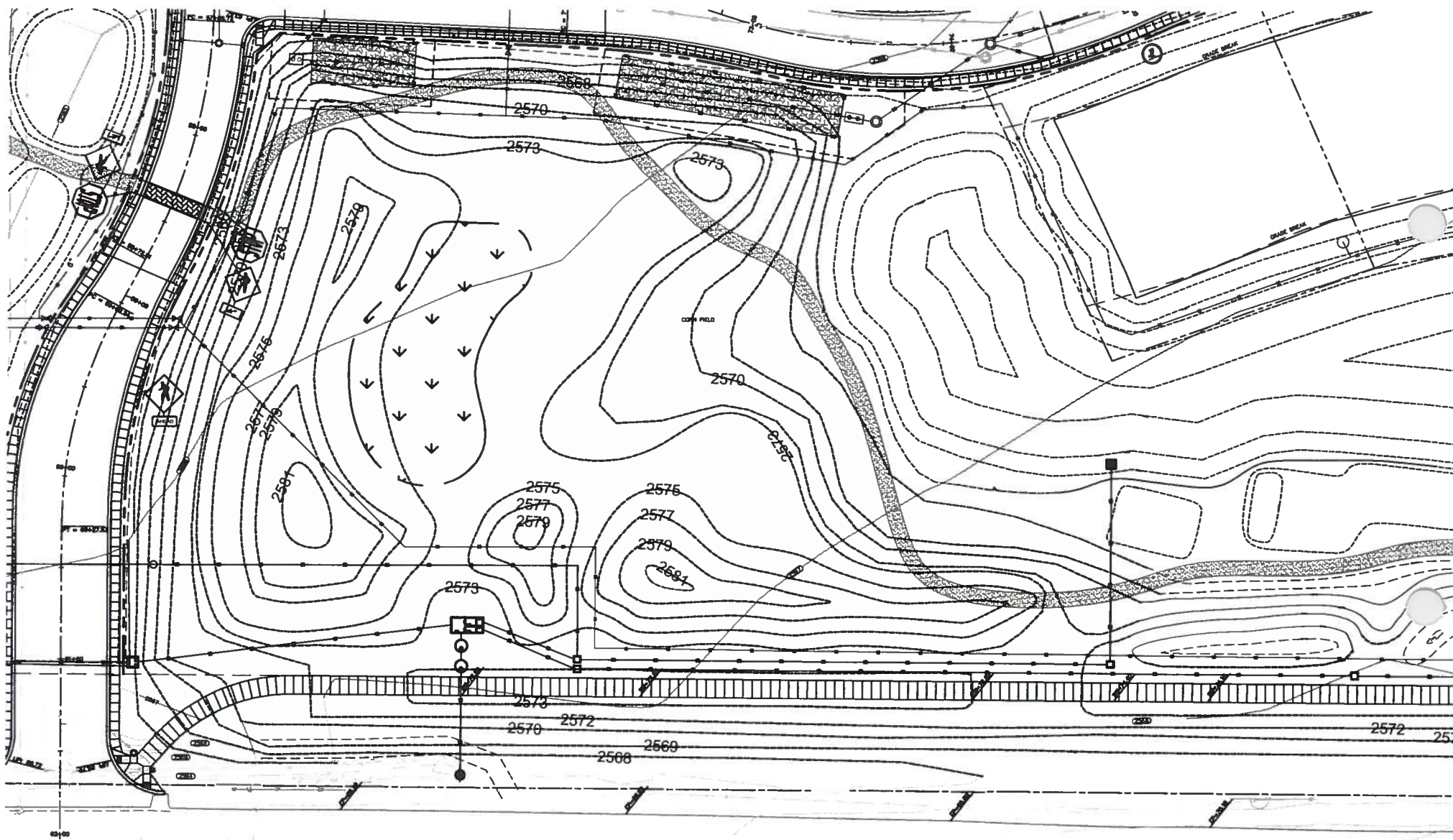
This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond.

User Input
Calculated value
Formula Explanations

Surface Area (AC.)	6.2	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	4.8	"Average Pond Depth" depicts the actual depth of the pond either measured or estimated. Note: If you know the maximum depth and not the average depth, the Field Examiner's Handbook suggests multiplying the maximum depth by 0.4 to get the average depth, or you can use any method that seems reasonable to attain average depth.
Pond Capacity (AF)	29.76	Pond Capacity is calculated by multiplying the Pond Surface Area by the Average Pond Depth. If you know the capacity, divide the capacity by surface area and enter the average pond depth in the space above. Note: If pond capacity is determined using a method shown on the "Pond Capacity" sheet, the user may need to modify the value of "Pond Capacity" (cell B9) manually. Note that if the value is modified manually, the formula will be altered for future use.
Multiple Fill Volume Above Initial Fill to Fulfill From Storage Needs- "Multiple Fills" (AF)	0	The "Multiple Fill Volume Above Initial Fill" is the acre-feet of water required to meet a <i>from storage</i> component if the <i>from storage</i> component exceeds a one time fill. This section should not include the amount of water needed to fill the pond initially or the amount of water needed to maintain the pond level due to evaporation or seepage. For example: if a pond has a capacity of 5 acre feet and 2.5 acre feet of seepage and evaporation, but the pond is used for irrigation that requires 10 acre feet of from storage for the irrigation use, then you would insert 5 acre feet into this location (10 acre feet needed - 5 acre feet from the initial fill = 5 acre feet of additional storage needed). Note: You must have a "From Storage" component exceeding the initial fill on the permit to include a volume in this space.
Estimated Seepage Loss (AF)	0.0	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	15.3	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	45.1	The "Total Volume Required" is calculated by adding the Pond Capacity, Multiple Fills, Seepage Loss, and Evaporation Loss amounts to determine the total amount of storage required.



Lake Depths of Permit 63-33691
Submitted by Jerry Palmer ton on 7/27/15



63-33691
Map of berm extension and 7th hole contours

