

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 55-7461

Exam Date: 7/9/2012

1. Current Owner: PAULA T ASHBY
PO BOX 247
BRUNEAU ID 83604-0247
(208)845-2850
2. Accompanied by: Paula and Henry Ashby
Phone No: (208) 845-2850
Address: PO BOX 247
BRUNEAU ID 83604-0247
Relationship to Permit Holder: Owner and son

3. SOURCE

TRIBUTARY

UNNAMED STREAM

NIP AND TUCK CREEK

B. OVERLAP REVIEW

1. Other water rights with the same place of use: NO
2. Other water rights with the same point of diversion: NO

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

UNNAMED STREAM

NW1/4SE1/4

Sec. 28, Twp 09S, Rge 03W, B.M.

OWYHEE County

Method of Determination: Field verification with Garmin GPS unit

2.

PLACE OF USE: STOCKWATER FROM STORAGE

[illegible]

PLACE OF USE: STOCKWATER STORAGE

[illegible]

09S 03W 34			X			
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PLACE OF USE: IRRIGATION STORAGE

TwP Rge Sec	NE				NW				SW				SE				Totals
	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	
09S 03W 28																X	
09S 03W 33	X																
09S 03W 34							X										

PLACE OF USE: IRRIGATION FROM STORAGE

TwP Rge Sec	NE				NW				SW				SE				Totals
	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	
09S 03W 34							8.5	.4	3.8	24.0	3.3	11.0			2.7		53.7
10S 03W 3		17.0	10.0		21.0												48.0
		L 2			L 3												

Total Acres: 101.7

STOCKWATER FROM STORAGE same as IRRIGATION FROM STORAGE

IRRIGATION STORAGE SAME AS STOCKWATER STORAGE

Method of Determination:

3. YES Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
YES Aerial Photo Attached (required for irrigation of 10+ acres).
YES Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
N/A	N/A	N/A	N/A	N/A	N/A

*Code to correspond with No. on map and aerial photo

Please Note: No wells or pumps are operating on this system.

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A

2. A measurement was not conducted during the field exam due to the stream being dry during the site visit. Therefore, a theoretical flow calculation was conducted using the Manning's Flow Calculator.

E. FLOW CALCULATIONS

____Additional Computation Sheets Attached

Measured Method:

Theoretical calculated discharge using the Manning Flow Calculator = 13.68 cfs.

Water right diversion limit is 3.02 cfs

Recommend the diversion rate to be limited to the 3.02 cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} =$$

2. Volume Calculations for Other Uses:

Storage volume of the reservoir: 16 Acres (surface area of reservoir) X 19.5 (height of dam in feet) X 0.4 (conversion factor per field examiners handbook) = 124 AF

The water right limits the volume of storage to 110 AF.

G. NARRATIVE/REMARKS/COMMENTS

This permit was field examined on 7/9/2012 by myself, Dennis Owsley, Sean Vincent, and Dan Nelson of IDWR. The owner Paula Ashby and her son Henry Ashby, accompanied us on the exam. This permit authorizes the diversion of an unnamed stream into a storage reservoir from which the water is being used for irrigation and stock water purposes. The name of the reservoir is Hackberry Reservoir on USGS quadrangle maps, with a dam inspection report completed by the department on October 15, 2007 (File No. 55-7461-insp-07). The capacity of the reservoir is 124 acre-feet, covers approximately 16 surface acres, and is contained behind a 19.5 feet high earth-filled dam. The storage capacity of the reservoir is more than the permitted volume on the water right.

Inflow into the reservoir is controlled through a check dam constructed on an unnamed tributary of Nip and Tuck Creek. The point of diversion is approximately 250 yards north of the reservoir. A 12" corrugated pipe delivers the water from the check dam to a ditch that flows into the reservoir. The 12" diversion pipe is buried from the check dam to the head of the excavated ditch, a distance of approximately 180'. The frequency and duration of the operation of the check dam is dependent on the current water supply conditions as well as the carry-over of the reservoir level from the previous year. On average, water is diverted from the check dam into the reservoir for approximately two weeks per year. A measurement was not taken due to the stream being dry during the field exam. A theoretical calculation of the pipe flow resulted in 13.68 cfs.

Irrigation occurs after the reservoir is filled so there is no direct irrigation from the creek. Therefore, it is recommended that the irrigation component of the water right be removed from the water right.

Outflow from the reservoir is controlled through a spillway check valve on the dam. The check valve allows water to leave the reservoir into a buried 12" corrugated pipe. The pipe is buried from the reservoir down approximately 150 yards below the toe of the dam. The discharge pipe daylights into a channel that conveys water to lands that are desired to be irrigated. The volume of water released from the reservoir to the irrigation system is dependent on the storage in the reservoir and number of cattle grazing within the property on a given year. On average, outflow from the reservoir is limited from two to seven days per year. A measurement of the outflow discharge was not taken, as the operation of the system was not functioning at the time of the field exam.

The irrigation system consists of a series of unlined excavated ditches that transmit water from the discharge pipe out of the reservoir down through the property. In multiple locations, pipes were buried off of the conveyance ditches to help irrigate lands adjacent to the excavated ditches by wild flooding. The locations and the number of the buried pipes could not be visually verified as the owners did not know the exact locations of where they were installed and have been in the ground for decades. Majority of the water that is released into the irrigation system is consumptively used by vegetation or seeps into the subsurface. Any remaining water that flows through the irrigation system returns to Nip and Tuck Creek near the southern boundary of the property.

A condition of the permit indicates the water appropriated is considered "trust water" pursuant to Section 42-203C, Idaho Code. Trust water consists of flows of water in the Snake River and its surface and ground water tributaries. The point of diversion, place of use, and the unnamed stream diverted through this permit are outside the boundaries of the "trust water" area. Therefore, this condition of the permit should be removed.

In summary, the beneficial use of this water right includes stockwater use for 130 head of range cattle, stockwater storage of 1.7 acre feet, irrigation of approximately 102 acres, and irrigation storage of 110 acre feet. No overlapping water rights exist on the place of use.

Have conditions of permit approval been met? ☒ Yes ☐ No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
STOCKWATER FROM STORAGE	04/15 to 10/15		1.70 AF
DIVERSION TO STORAGE	01/01 to 12/31	3.020 CFS	
STOCKWATER STORAGE	01/01 to 12/31		1.70 AF
IRRIGATION STORAGE	01/01 to 12/31		110.00 AF
IRRIGATION FROM STORAGE	04/15 to 10/15		110.00 AF
<u>Totals:</u>		3.020 CFS	110.00 AF

2. Recommended Amendments

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☐ None

☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

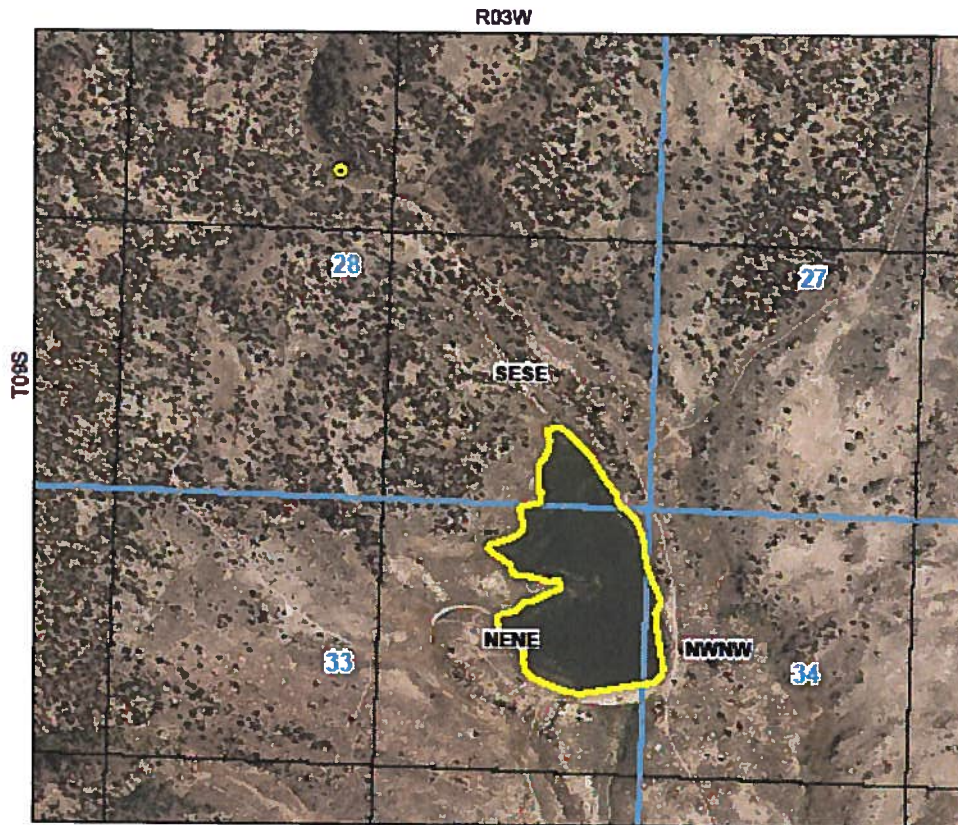
I. AUTHENTICATION

Field Examiner's Name Dennis Owsley Date 7/19/12
 Reviewer _____ Date _____

State of Idaho
Department of Water Resources
Water Right License

55-7461

Water Service Area Boundary for Paula T Ashby



0 0.075 0.15 0.3 Miles

- Point of Diversion
- Place Of Use Boundary
- Townships
- PLS Sections
- Quarter Quarters

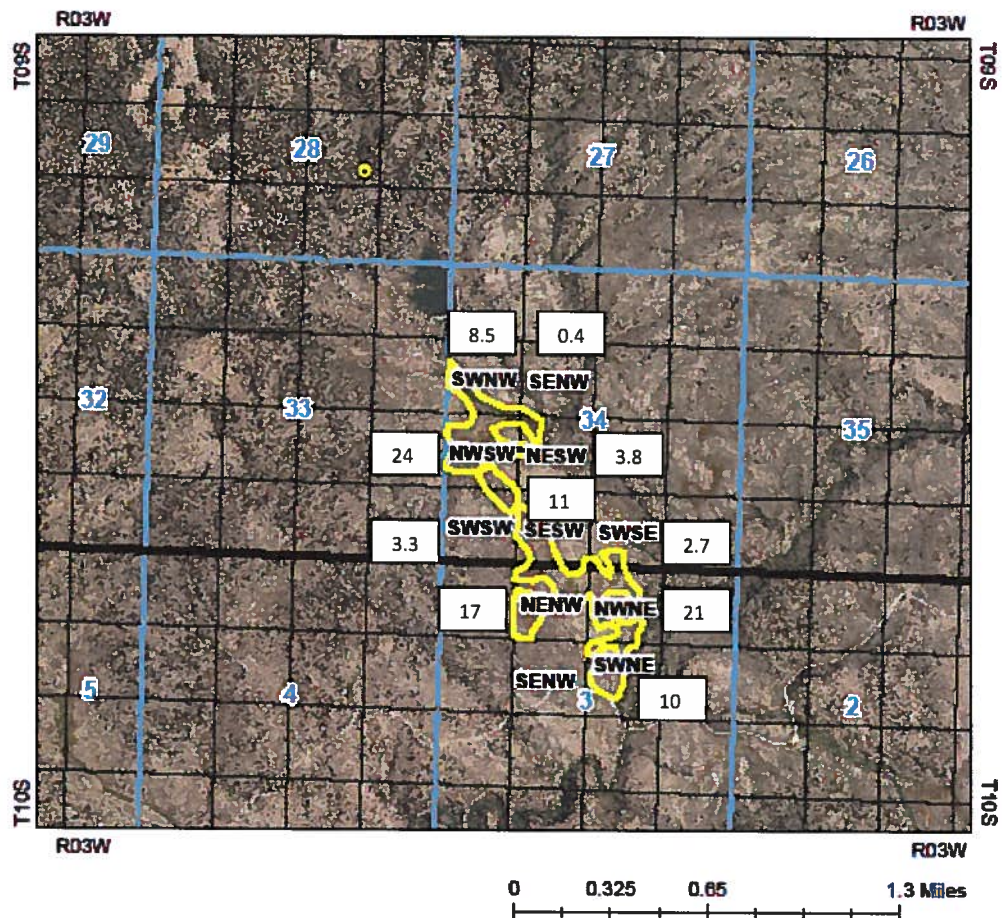
Map showing the location of storage
for irrigation and storage for
stockwater.



State of Idaho
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Water Service Area Boundary for Paula T Ashby



- Point of Diversion
- Place Of Use Boundary
- Townships
- PLS Sections
- Quarter Quarters

Map of irrigation from storage and stockwater from storage POUs and associated acres within each 40-acre tract.





Figure 1. View looking south at the POD head gate. Photo taken on 7/9/12 by D.O.



Figure 2. Photo looking south at the POD head gate where the 12" pipe that transmits water from the unnamed stream to the conveyance ditch to the reservoir. Photo taken on 7/9/12 by D.O.



Figure 3. Photo looking north of the check dam structure at the POD. Photo taken on 7/9/12 by D.O.



Figure 4. Photo looking north of the head gate control structure at the POD. Photo taken on 7/9/12 by D.O.



Figure 5. Photo looking north viewing the end of the discharge pipe that transmits water from the POD to the conveyance ditch to the reservoir. Photo taken on 7/9/12 by D.O.

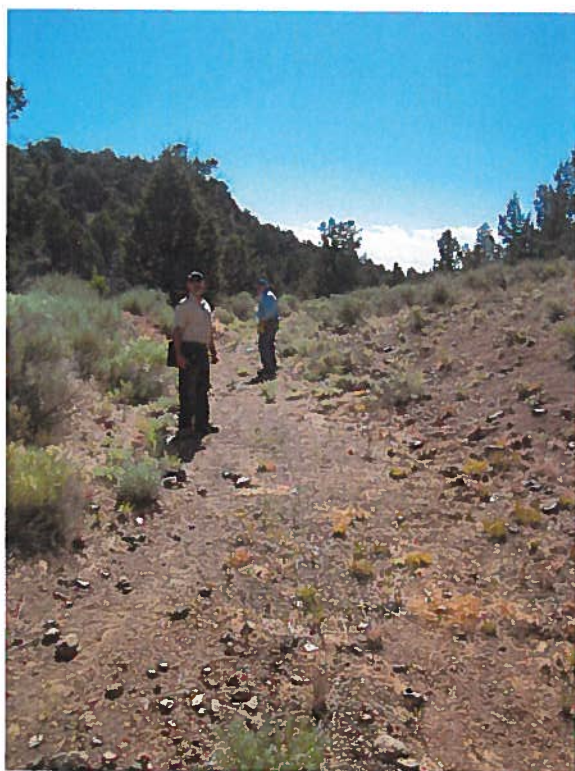


Figure 6. Photo looking south showing the convenience ditch from the POD and pipeline to the reservoir. Photo taken on 7/9/12 by D.O.

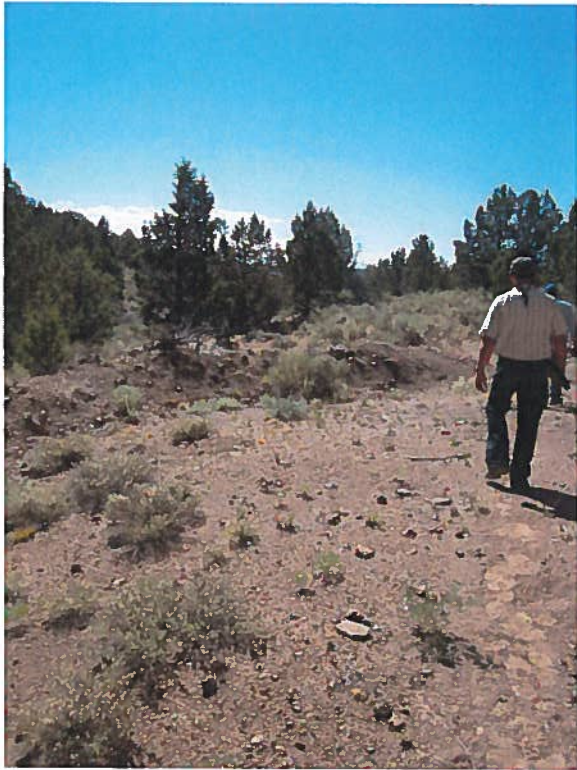


Figure 7. Photo looking south of another view of the conveyance ditch from the POD and pipeline to the reservoir. Photo taken on 7/9/12 by D.O.



Figure 8. Photo looking south from center of dam showing irrigated lands. Photo taken on 7/9/12 by D.O.



Figure 9. Photo viewing south from head gate control on dam. Photo taken on 7/9/12 by D.O.



Figure 10. View looking north from head gate control on dam and view of reservoir. Photo taken on 7/9/12 by D.O.



Figure 11. View looking north from dam of Hackberry Reservoir. Photo taken on 7/9/12 by D.O.



Figure 12. View looking west across the dam at Hackberry Reservoir. Photo taken on 7/9/12 by D.O.



Figure 13. View looking north from head gate control on dam. Photo taken on 7/9/12 by D.O.



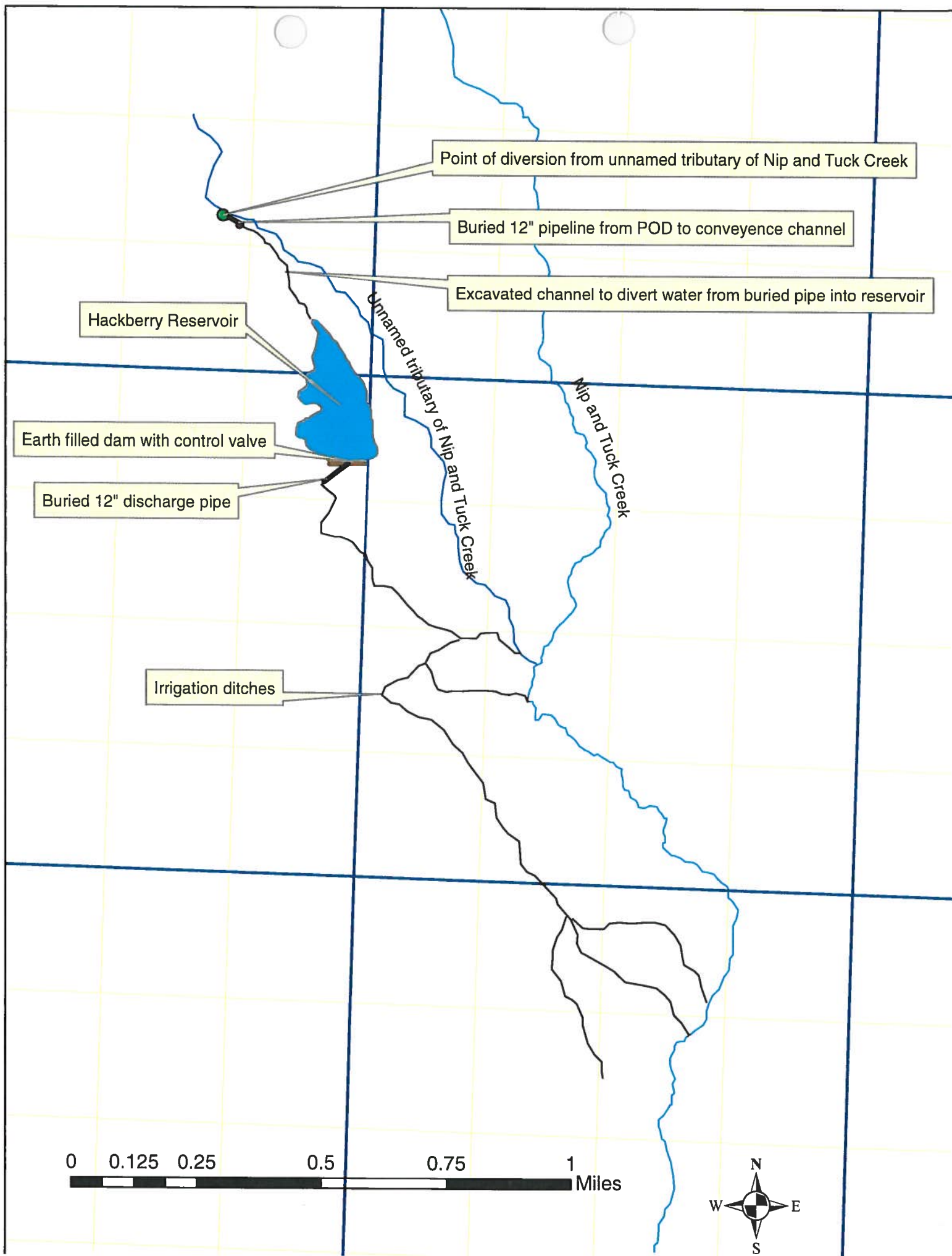
Figure 14. View looking north of exposure of buried discharge pipe from the reservoir. Note the dam in the background of the photo. Photo taken on 7/9/12 by D.O.



Figure 15. View looking north of irrigation pipeline from the reservoir. Photo taken on 7/9/12 by D.O.



Figure 16. View looking south of irrigation ditch below the pipeline from the reservoir. Photo taken on 7/9/12 by D.O.



Manning's Equation Calculator for Flow Rate in a Circular Conduit Flowing Full

S = 0.0710 ft/ft
n = 0.009 manning's coefficient
d = 12.0 pipe diameter (inches)
D = 1.00 pipe diameter (feet)
r = 0.50 pipe radius (feet)
A = 0.79 area (ft²)
WP = 3.14 wetted perimeter (ft)
R = 0.25 hydraulic radius (ft)

Q = 13.68 flow rate (CFS)

READ ME

Manning's Equation (1), is an empirical formula that solves for velocity (v) in a open channel under uniform flow. The continuity equation (2) when combined with equation (1) allows for the computation of the flow rate (Q) in an open channel under uniform flow.

In equations (1) and (3), η refers to Manning's Coefficient of Roughness and can be found in tabulated form for many open channel types. R is the hydraulic radius of the open channel and is equal to the area of the open channel divided by the wetted perimeter, $R = A/P$. S is the slope of the energy grade line which is often assumed to be equal to the slope of the channel.

Because Manning's Equation is empirical the units are not arbitrary. To obtain a velocity in ft/s and a flow rate in ft³/s, area must be reported in ft², hydraulic radius must be reported in ft, and S must be reported in ft/ft. Manning's Coefficient of Roughness is a unitless constant.

$$(1) \quad v = 1.49 \left(\frac{1}{\eta} \right) \left(R^{\frac{2}{3}} \right) \sqrt{S}$$

$$(2) \quad Q = vA$$

$$(3) \quad Q = 1.49 \left(\frac{1}{\eta} \right) A \left(R^{\frac{2}{3}} \right) \sqrt{S}$$

Channel Slope

Slope Options

☒ Manual Entry ☐ Slope Calculator

Slope Calculator

Rise = 13 feet

Run = 183 feet

Slope, S = 0.0710 ft/ft

Pipe Material, (n):

plastic (pvc, abs)

Pipe Diameter (inches)

12.0 inches