

Pond Interconnection and Estuary Culvert Inspection Report

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Storm Water Management Pond Interconnections

The ponds around the Grand Harbor and Oak Harbor property are a critical part of the storm water management system. The majority of the ponds are organized into 4 basins. Basin 1 is in the Falls area. Basin 2 is around Victoria and north of Newport. Basin 3 is around Harmony and south into Oak Harbor and next to the club. Basin 5 is around River Club and the Harbor golf course. Basin 4 is the Estuary. All excess water above the designed control levels flow into the Estuary. There are 7 other unconnected ponds; St Andrews, 2 in River Village, 4 in the Reserve/ Osprey Village area. The 4 in the Reserve area overflow into basin 5. The other 3 overflow into the Estuary directly. Critical for the proper functioning of the pond system is the movement of water from one pond to another on the way to the discharge points (control structures with weirs) to the estuary.

In August and September 2019 the majority of the pond interconnections and about half of the culverts in the Estuary were inspected. There were 25 interconnections plus 5 double culverts in basins 1, 2, 3, 4, and 5 plus 8 control structures (weirs that control water levels and flow) were inspected. Twelve of the interconnections needed to be cleaned out in November to complete the inspections. The initial August/September inspections missed 3 other pipes, one control structure in the pond system and 4 culverts sets in the estuary. These last pipes were inspected in December.

The inspections found 3 pipes were damaged (partially crushed) restricting flow and one pipe had a hole (rusted through). There were 2 weir structures that were modified without a permit and one was partially blocked. A gate structure was added between two Basin 3 ponds that is not permitted as well. One control structure (St Andrews) was not as built and is completely non-functional. Two ponds had a sheet of plywood blocking a pipe mouth. Two pairs of double culverts and one single culvert in the Estuary were completely blocked. One other double in the Estuary is partially blocked. No Estuary culverts were cleared at this time.

The following is the compilation of all the diver and cleaning reports for this inspection. Shenandoah Construction, the contractor doing the inspections and cleaning, used their own numbering system. Page 3 is the map that Shenandoah used with their numbering of lakes and control structures that also show the pipes that were inspected. The lake numbers differ from the numbers assigned as part of the SJRWMD Consumption and Use Permit. The next to last page of this report is a new map using the SJRWMD numbers and locating all of the permitted control structures, interconnecting pipes, and Estuary culverts in the system. Note that the 4 ponds in the Reserve area were not inspected. These ponds are fairly new and, therefore, were not inspected nor are they numbered on the Shenandoah map.

Ponds and Connections Using Shenandoah



Completed 12/2019

Condition Summary

Page	Basin	Connection				
6	5	Lake	1	-	Lake	16 OK
8	5	Lake	1	-	Lake	5 Cleaned
14	St Andrews	Lake	24	-	Lake	EST The control structure is not as designed and installed and is not in the correct position. The CB was pumped out and there is no outfall. It is also likely the side drain is not attached and there is a pipe going directly back to the pond.
16	2	Lake	11	-	Lake	12 OK
18	3	Lake	18	-	Lake	19 Cleaned
24	3	Lake	22	-	Lake	23 OK
31	3	Lake	18	-	Lake	13 OK
33	River Village	Lake	25	-	Lake	EST OK
35	River Village	Lake	25	-	Lake	26 OK
37	5	Lake	4	-	Lake	5 OK
39	2	Lake	8	-	Lake	9 OK
43	2	Lake	9	-	Lake	12 Cleaned
47	5	Lake	17	-	Lake	5 Cleaned
49	3	Lake	23	-	Lake	CS7 OK
52	EST	DBL#2			EST	OK
56	EST	DBL#3			EST	OK
58	EST	DBL#1			EST	OK
60	3	Lake	18	-	Lake	EST OK some marine growth and some corrosion. 2 bolts protruding in pipe near CS4 outfall in mangrove 13in sediment
64	2 TO 3	Lake	9	-	Lake	14 Cleaned CB1 to Lake 14 Note collapsed pipe 19ft from entrance in pond 9. Needed to create a channel at 14 outfall due to pile of silt. Unpermitted weir modification noted.
70	1 TO 2	Lake	10	-	Lake	11 Cleaned 11 outfall to CB3
76	EST	DBL#5			EST	Both east and west culverts are completely blocked
80	2	Lake	7	-	Lake	12 Home made structure Lifted
82	3	Lake	30	-	Lake	21 Cleaned
84	5	Lake	17	-	Lake	EST Hard growth lining pipe in estuary
86	5	Lake	16	-	Lake	2 Cleaned. Damaged Pipe in L16
88	5	Lake	3	-	Lake	1 Cleaned
90	3	Lake	13	-	Lake	14 OK
92	3	Lake	15	-	Lake	13 OK
94	3	Lake	20	-	Lake	21 Cleaned
96	1	Lake	28	-	Lake	10 Cleaned
98	3	Lake	13	-	Lake	20 OK
100	EST	DBL#4			EST	OK no water in pipe
102	5	Lake	16E	-	Lake	1 Damaged pipe could not inspect
105	EST	DBL#6			EST	Partially Blocked
107	EST	DBL#7			EST	OK
109	EST	Single#8			EST	Blocked
111	EST	DBL#9			EST	Partially Blocked

Lake 1 to Lake 16
River Club

SHENANDOAH

CONSTRUCTION

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 6, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 1 to Lake 16

Type of Pipe: CMP Diameter: 36" Length: 200'

Depth from surface to top of pipe: 30"

Describe access to the pipe: Outfall in Lake 1

End of pipe inspection made from (N.S.E.W): North West

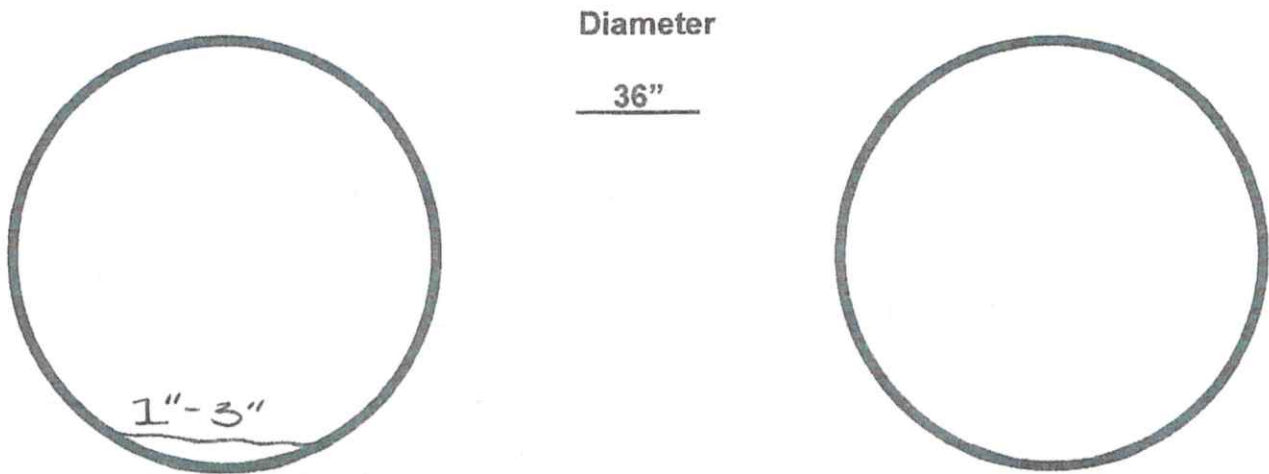
General Condition of Pipe: Dive team noted 1 to 3 inches of sediment throughout the pipe. Overall condition is good with no debris or obstructions.

Lake 1 to Lake 16
River Club

2 of 2

Illustrate Condition & Contents of Pipe

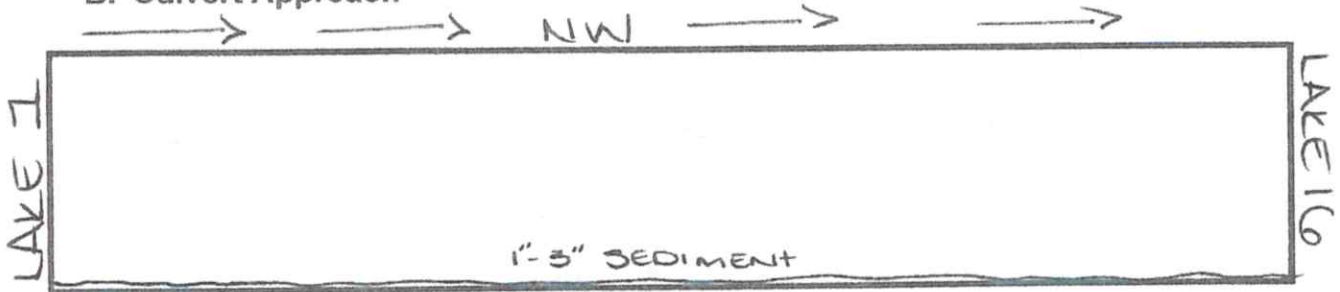
A. Cross Section:



Diameter

36"

B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: William Tender: Tyler Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 7, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 1 to Lake 5

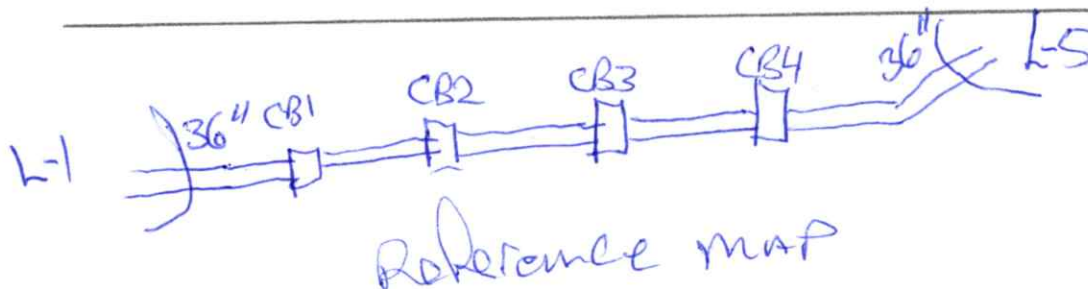
Type of Pipe: CMP Diameter: 36" Length:

Depth from surface to top of pipe: 4'

Describe access to the pipe: Catch Basin starting with 10' of sediment

End of pipe inspection made from (N.S.E.W): South to North

General Condition of Pipe: Dive team noted 10" of sediment at the entrance of the pipe. Slight sediment increases at catch basin 2. Catch basin 2 is in overall good condition. Sediment decreased to 2" to 8" after catch basin 2. At 100' into the pipe the sediment rose to 24". Dive is unable to further inspect the pipe due to clog at 100'.

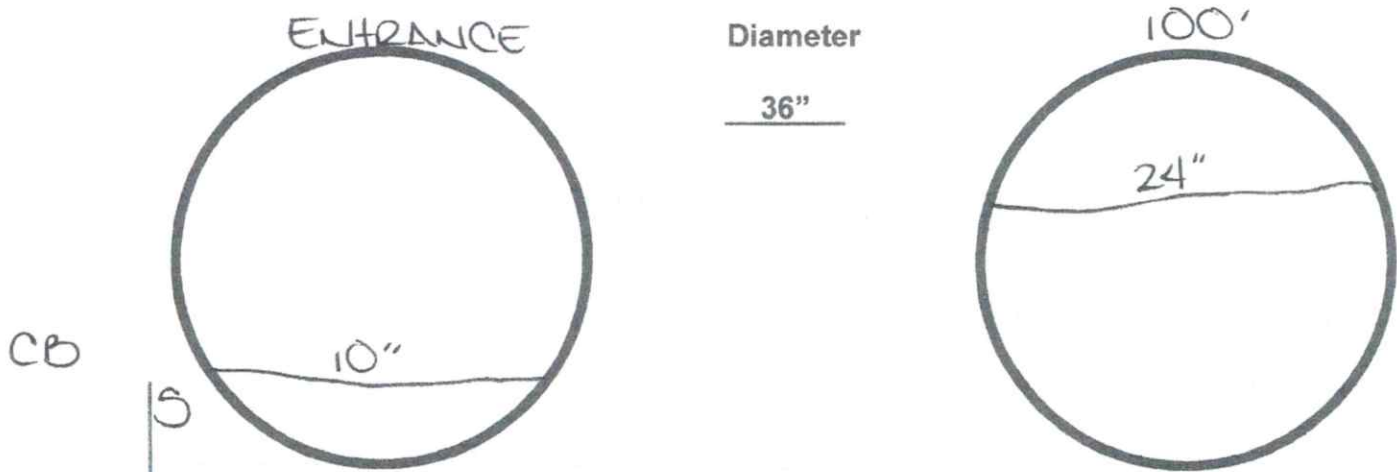


Lake 1 to Lake 5
River Club

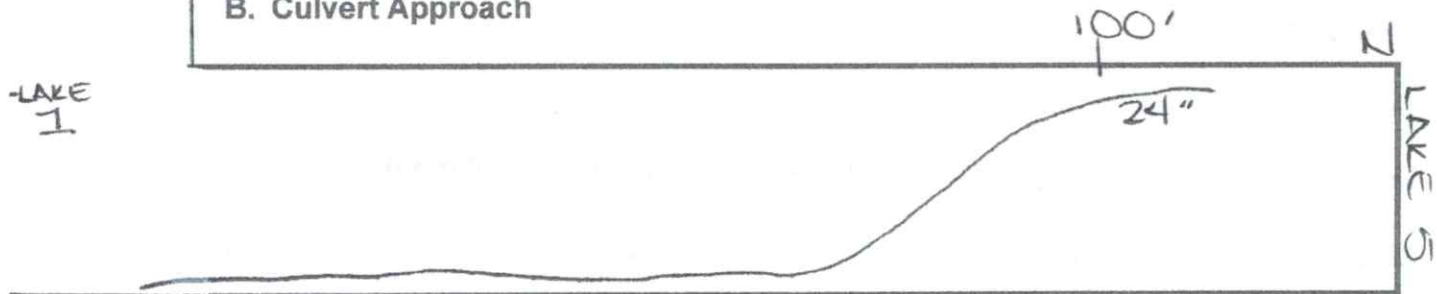
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Tyler Tender: William Supervisor: Chris

Name of Customer Representative on Site: David

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Lake 1 to Lake 5
River Club

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 7, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – CB4 to L5 L1 to L5

Type of Pipe: RCP Diameter: 36" Length:

Depth from surface to top of pipe: 3'

Describe access to the pipe: Catch Basin 1

End of pipe inspection made from (N.S.E.W): North

General Condition of Pipe: Dive team noted 10" of sediment at the entrance of the pipe. At 90' the pipe turns 45 degrees towards the North West. At 150' the sediment level rose to 2' diver unable to continue inspection due to the sediment levels.

Lake 1 to Lake 5
River Club

2 of 2

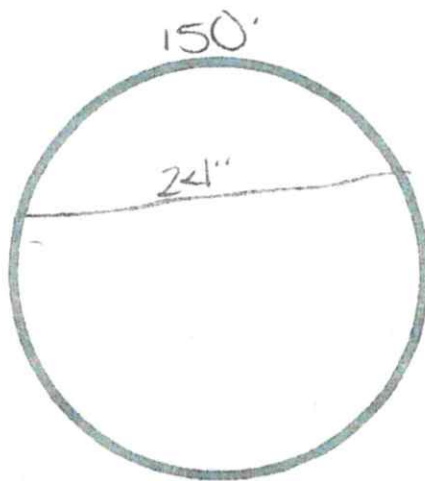
Illustrate Condition & Contents of Pipe

A. Cross Section:

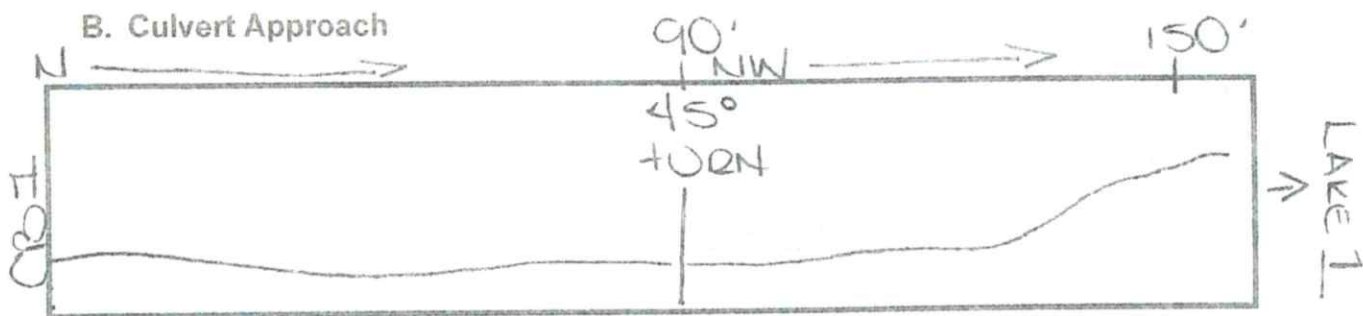


Diameter

36"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Tyler

Tender: William

Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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Lake 1 to Lake 5
River Club

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 7, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – CB 1 to 4

Type of Pipe: RCP Diameter: 36" Length:

Depth from surface to top of pipe: 3'

Describe access to the pipe: Catch Basin 1

End of pipe inspection made from (N.S.E.W): South

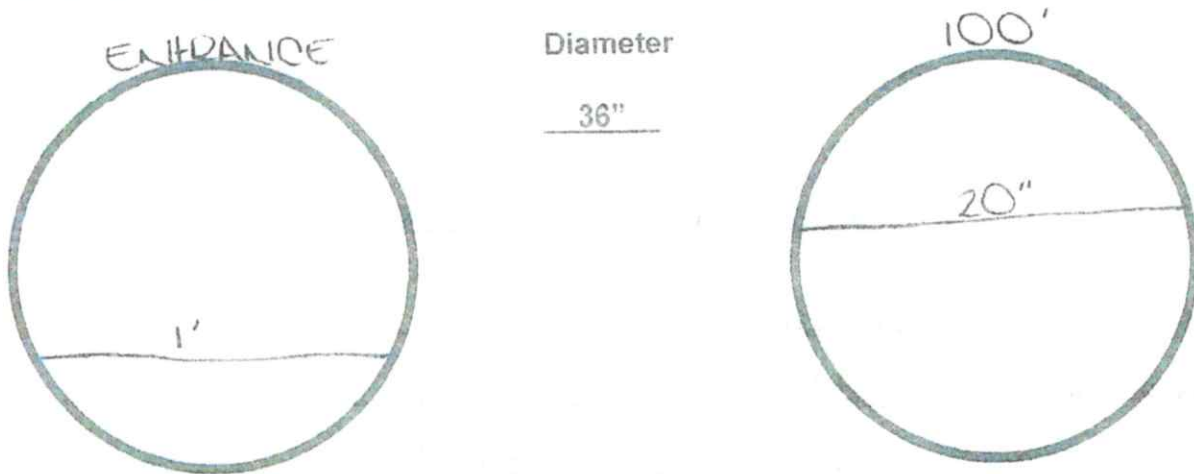
General Condition of Pipe: Dive team noted 1' of sediment at the entrance of the pipe. Slight sediment increases at CB2, CB2 in good condition. Sediment decreased after CB 2 to 8". Sediment increased to 20" at 100'. Diver unable to continue the inspection from this end. Overall condition of the pipe is good.
Good water flow through the pipe.

**Lake 1 to Lake 5
River Club**

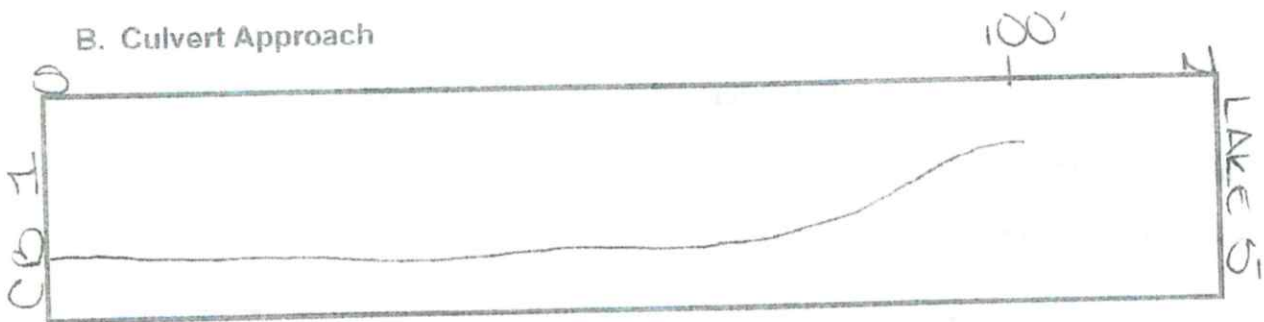
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Tyler **Tender:** William **Supervisor:** Chris

Name of Customer Representative on Site: David

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 8, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Catch Basin between Lake 24 and Mangrove Esterian

Type of Pipe: RCP Diameter: 36" Length: 65'

Depth from surface to top of pipe: 3'

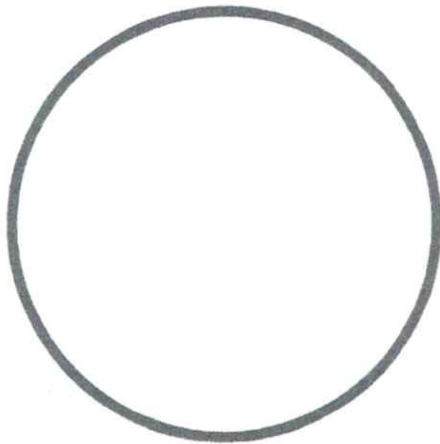
Describe access to the pipe: Catch Basin between lakes 24 and Mangrove Esterian

End of pipe inspection made from (N.S.E.W): East to West

General Condition of Pipe: Dive team noted that the Pipe is clogged at the outfall in lake 24. Diver was able to make it to the outfall but was unable to exit. Lake 24 outfall pipe flows east to CS #6 at Mangrove estuary.

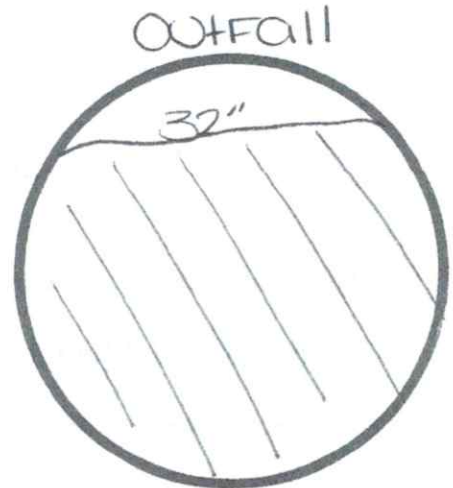
Illustrate Condition & Contents of Pipe

A. Cross Section:

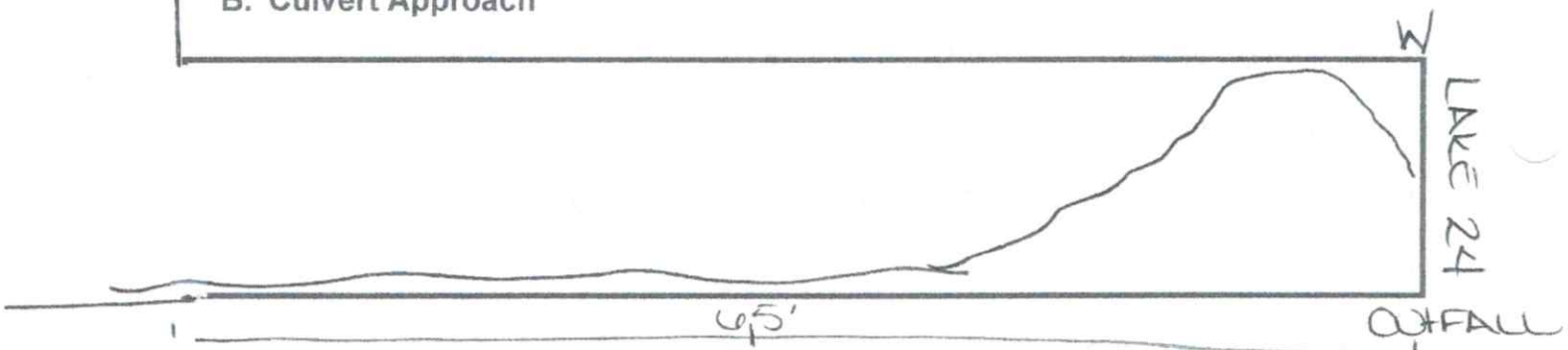


Diameter

36"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Tyler Tender: William Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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Lake 11 to Lake 12
Basin 2

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 8, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – CB1 between Lake 11 and Lake 12

Type of Pipe: CMP Diameter: 36" Length: 175'

Depth from surface to top of pipe: 4'

Describe access to the pipe: Catch basin closest to lake 12 heading both North
and South toward Lake 12 and 11

End of pipe inspection made from (N.S.E.W): North to South

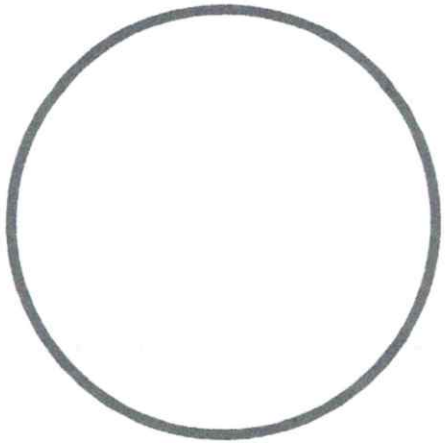
General Condition of Pipe: Dive team noted 6" of sediment throughout the length
of the pipe. Overall condition is good with good flow.

Lake 11 to Lake 12
Basin 2

2 of 2

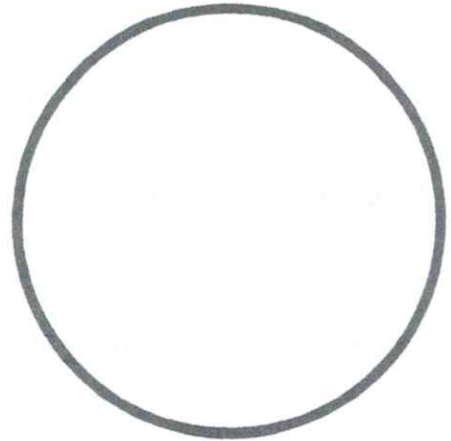
Illustrate Condition & Contents of Pipe

A. Cross Section:



Diameter

36"



B. Culvert Approach

3 | CB2 |

| CB1 |

2
LAKE 12



45°

C. Culvert Profile: Round

Comments: _____

Diver: William Tender: Tyler Supervisor: Chris

Name of Customer Representative on Site: David

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Lake 18 to Lake 19
Basin 3

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 6, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 18 to Lake 19

Type of Pipe: CMP Diameter: 36" Length: 180'

Depth from surface to top of pipe: 28"

Describe access to the pipe: Outfall in Lake 18

End of pipe inspection made from (N.S.E.W): North to South

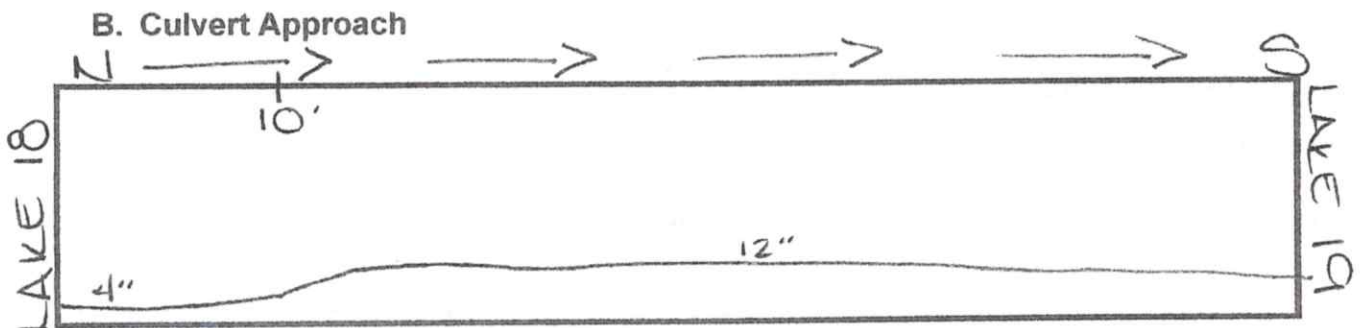
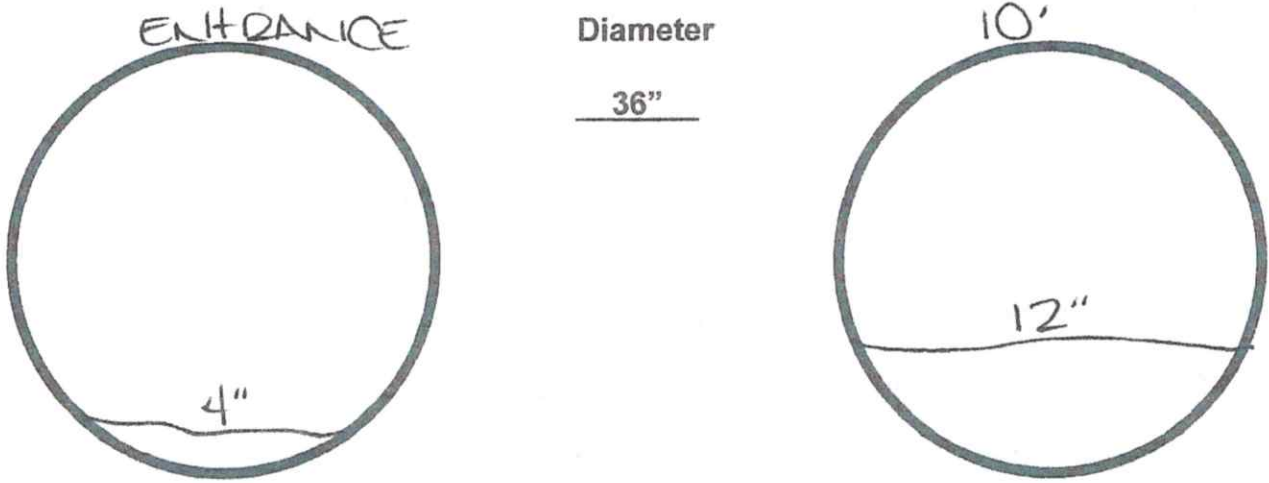
General Condition of Pipe: Dive team noted 4" of sediment at the entry of the
pipe. Sediment level increases to 12" 10' into the pipe. Overall condition of the
pipe is good.

Lake 18 to Lake 19
Basin 3

2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



C. Culvert Profile: Round

Comments: _____

Diver: Tyler Tender: William Supervisor: Chris

Name of Customer Representative on Site: David

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 6, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – CB 1 between L 18 and L 19

Type of Pipe: RCP Diameter: 36" Length:

Depth from surface to top of pipe: 3'

Describe access to the pipe: Catch Basin 1

End of pipe inspection made from (N.S.E.W): North to Lake 18

General Condition of Pipe: Dive team noted 5" of sediment at the entrance of the pipe. Sediment increasing at approximately 20' into pipe to 8" – 10". Diver arrived at a manhole that was not accessible from the top side due to overgrowth.

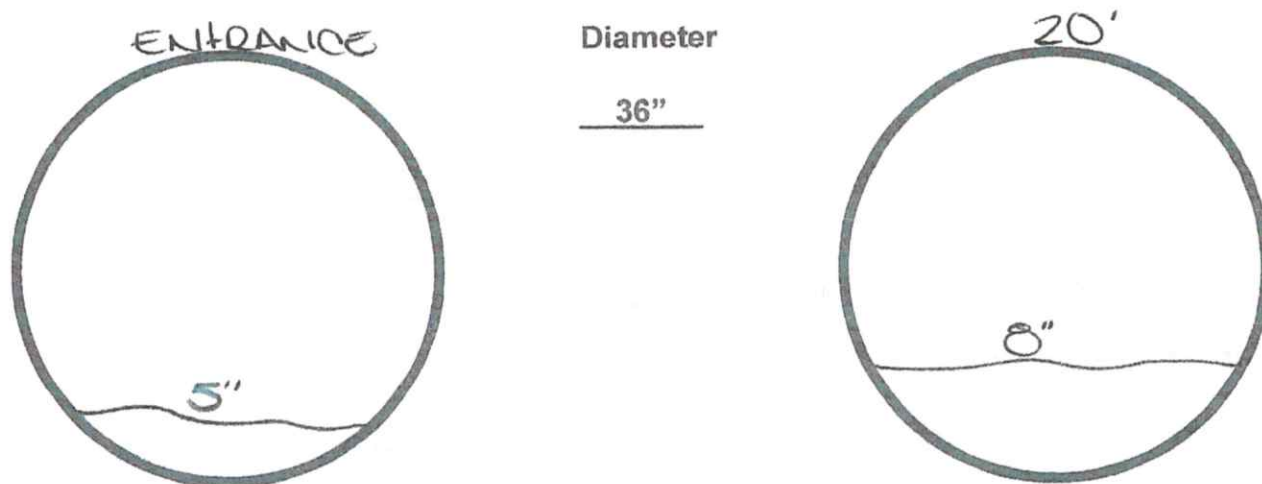
Inspection ended.

Lake 18 to Lake 19
Basin 3

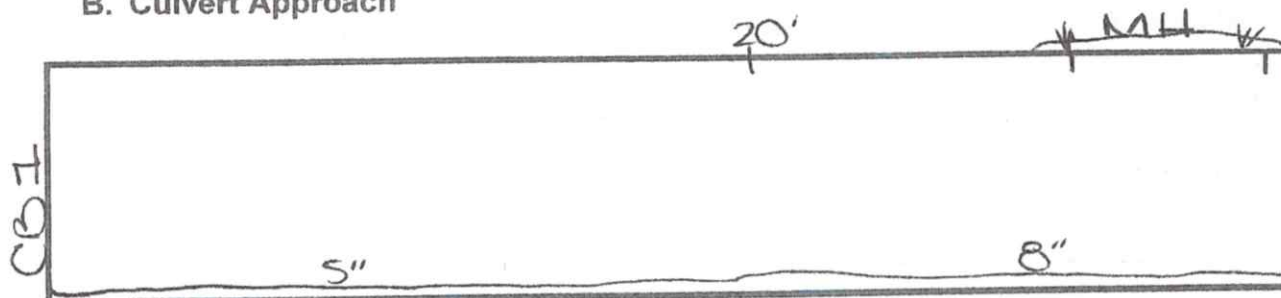
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: William Tender: Tyler Supervisor: Chris

Name of Customer Representative on Site: David

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Lake 18 to Lake 19
Basin 3

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 6, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – CB 1 to L 19

Type of Pipe: RCP Diameter: 36" Length:

Depth from surface to top of pipe: 3'

Describe access to the pipe: Catch Basin 1

End of pipe inspection made from (N.S.E.W): South to Lake 19

General Condition of Pipe: Dive team noted 3" of sediment at the entrance of the pipe. Catch Basin 2 is in overall good condition. Sediment increased to 8" – 10 " after CB 2 and continues to increase. Diver unable to continue inspection at the 50' mark due to sediment. The sediment throughout the pipe is a mixture of sand and shell.

Lake 18 to Lake 19
Basin 3

2 of 2

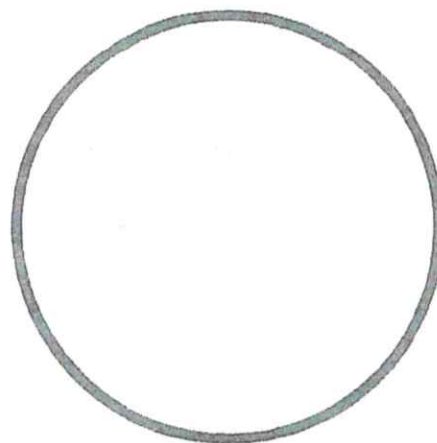
Illustrate Condition & Contents of Pipe

A. Cross Section:

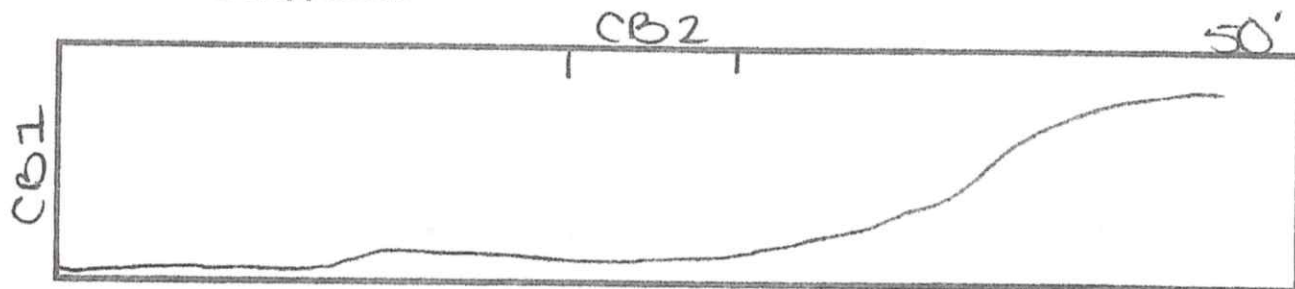


Diameter

36"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: William Tender: Tyler Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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Lake 22 to Lake 23
Basin 3

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 9, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Catch Basin 6 to Lake 23

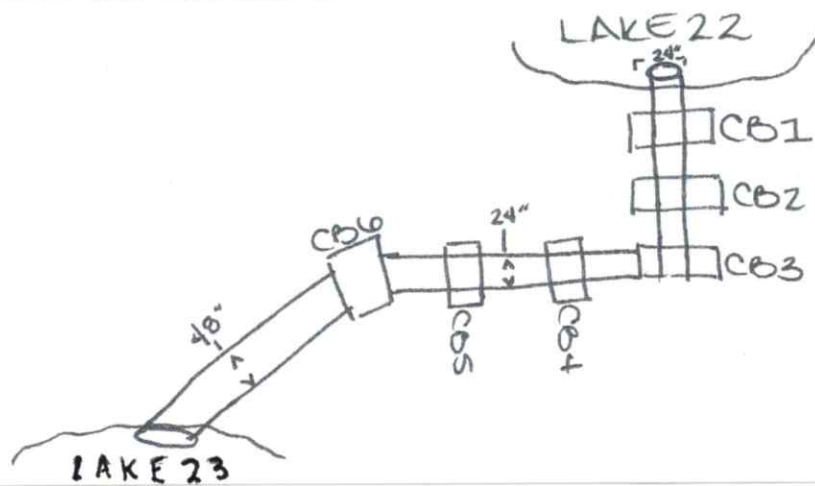
Type of Pipe: RCP Diameter: 48" Length: _____

Depth from surface to top of pipe: 6'

Describe access to the pipe: Catch Basin

End of pipe inspection made from (N.S.E.W): East to West

General Condition of Pipe: Diver noted 4" of sediment throughout the length of the pipe. Overall condition of the pipe is good with no damage or obstructions.

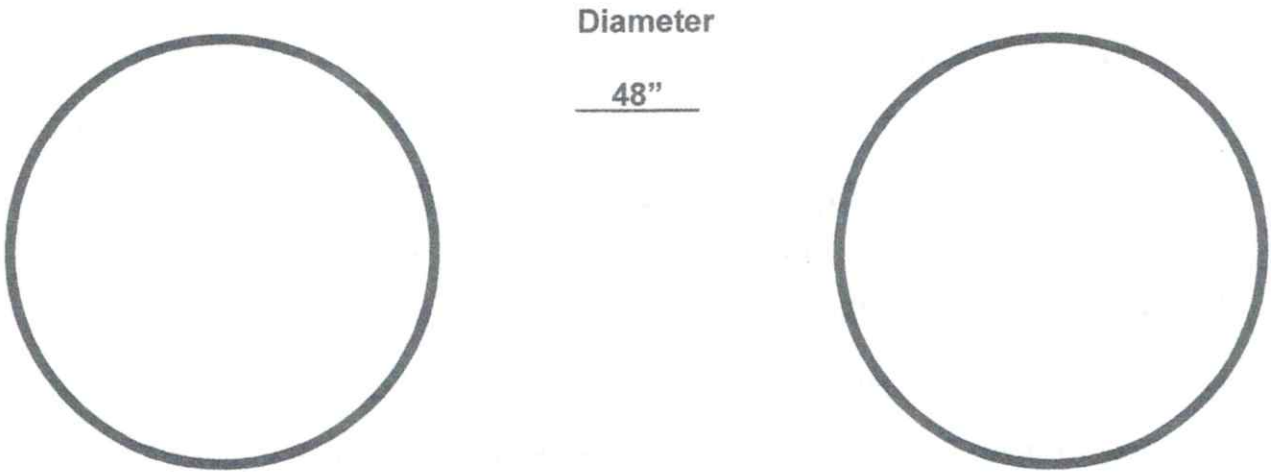


Lake 22 to Lake 23
Basin 3

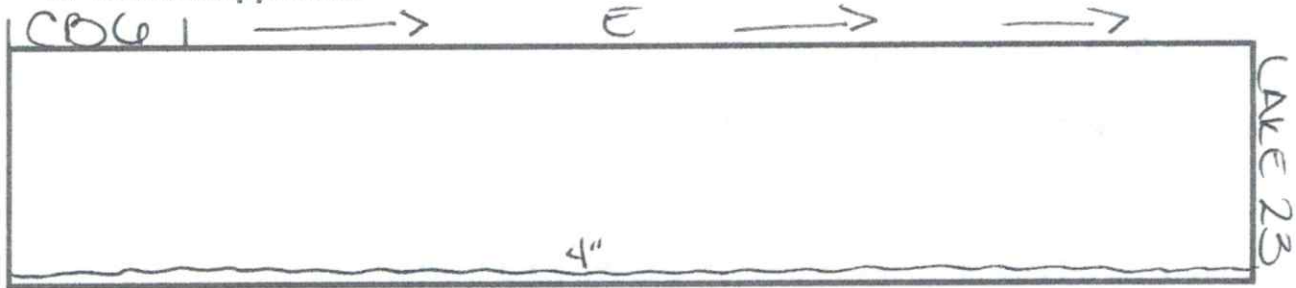
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: Diver noted that Lake 22 connects to Lake 23 through a series of 6 catch basins. The outfall in Lake 22 is a 24" pipe that runs through the first 5 catch basins. Dive was unable to inspect due to size.

Diver: William Tender: Tyler Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 8, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Double #3

Type of Pipe: CMP Diameter: 72" Length: 60'

Depth from surface to top of pipe: 0" Exposed

Describe access to the pipe: Side by side pipes running North to South.

End of pipe inspection made from (N.S.E.W): North to South

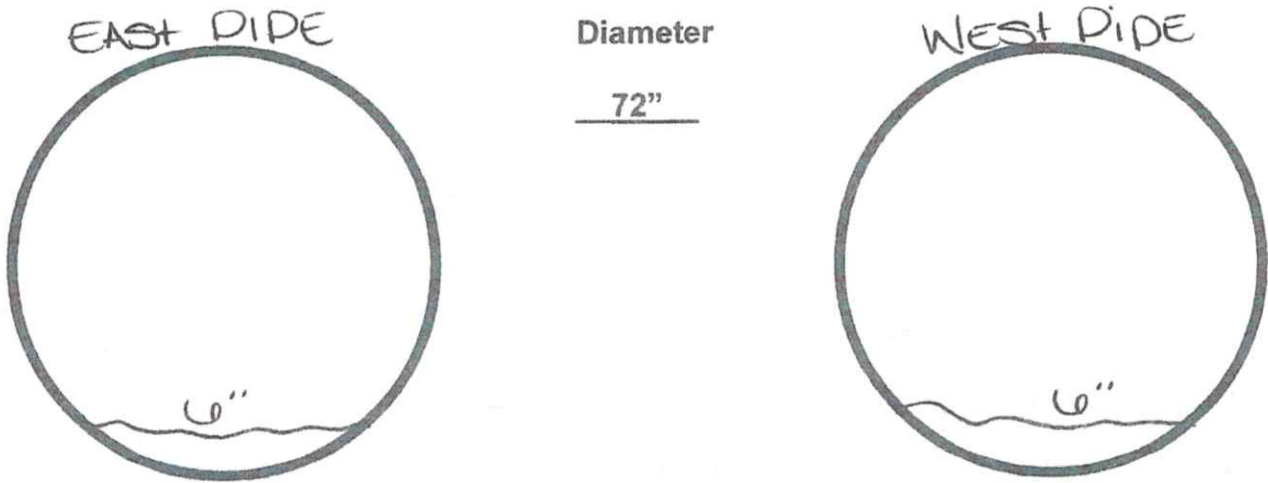
General Condition of Pipe: Dive team noted 6" of sediment throughout the length of both pipes. Overall condition of the pipes is good with no damage, or obstructions.

Lake 22 to Lake 23
Basin 3

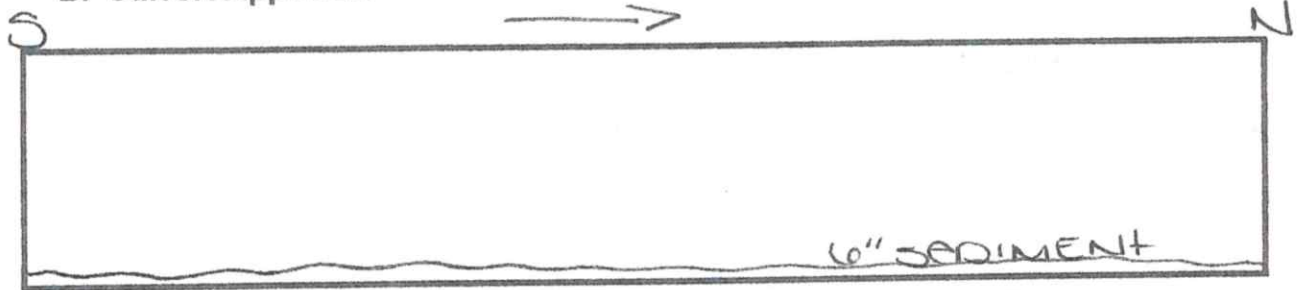
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Tyler Tender: William Supervisor: Chris

Name of Customer Representative on Site: David

SHENANDOAH

CONSTRUCTION

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CULVERT PIPE INSPECTION FORM

Date of Inspection: December 11, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbour Golf Course lake 22 to lake 23

Type of Pipe: CMP Diameter: 42" Length: _____

Depth from surface to top of pipe: 18"

Describe access to the pipe: On bottom of lake 15' from shoreline in the

South East corner

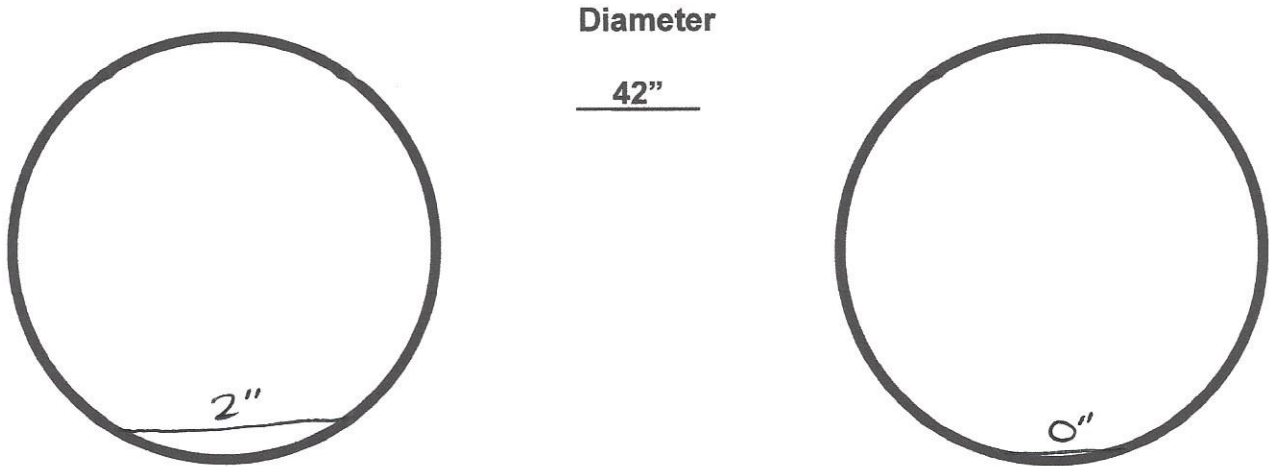
End of pipe inspection made from (N.S.E.W): West to East

General Condition of Pipe: The mouth of pipe to basin 1 is 69' running South-West. Sediment buildup at the mouth is 2" then drops to 0" with no marine growth. Pipe Transitions from CMP to RCP at basin 1. Basin 1 is an RCP pipe with 1" of sediment with no marine growth. Basin 1 to MH2 is 100' running North-West. Sediment in structure at MH2 is 4" deep. Sediment increases to 7" deep at 35'. MH2 to MH3 is a 122' RCP pipe that runs North-West with a diameter of 42" and a sediment level of 2". Sediment level at MH3 structure is 6" deep. MH3 to basin 4 is a 133' long RCP pipe running South-East, and has a diameter of 42" with no 0" of sediment. At 73' Sediment increases to 4", Pipe has no Marine Growth. Basin 4 has a Sediment level of 10". Basin 4 to Basin 5 runs South-East for 157'. The RCP from basin 4 to basin 5 is 42" in diameter with a sediment level of 11" with no marine growth. Basin 5 has a sediment level of 12". Basin 5 to basin 6 South-East for 101', it is an RCP pipe with a diameter of 42", it has a sediment level of 4" and no marine growth. Basin 6 to Basin 7 is an RCP pipe that runs for 273' South-East, it is 42" in diameter with a sediment level of 13" and no marine growth. Basin 7 has a sediment level of 4" with two pipes connecting. The pipe to the left of diver runs North-East and is an RCP with a sediment level of 0".

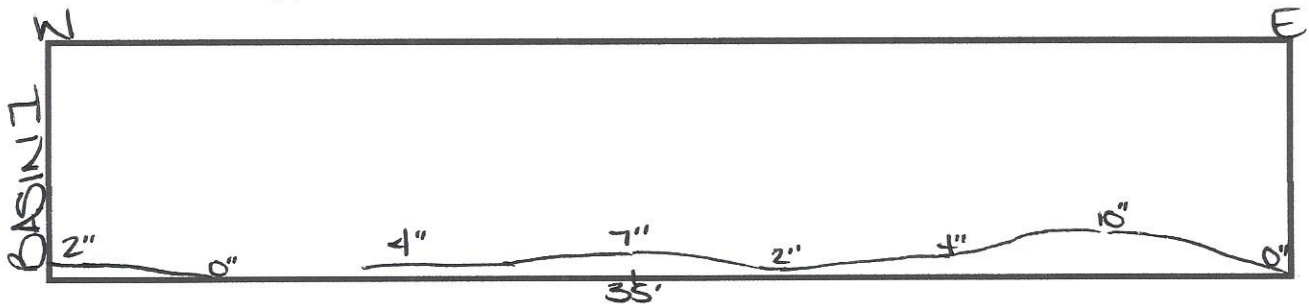
The pipe to the right of the diver runs South-East and is an RCP with a sediment level of 0"

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Austin

Tender: Shane

Supervisor: Shane

Name of Customer Representative on Site: Dave Giles

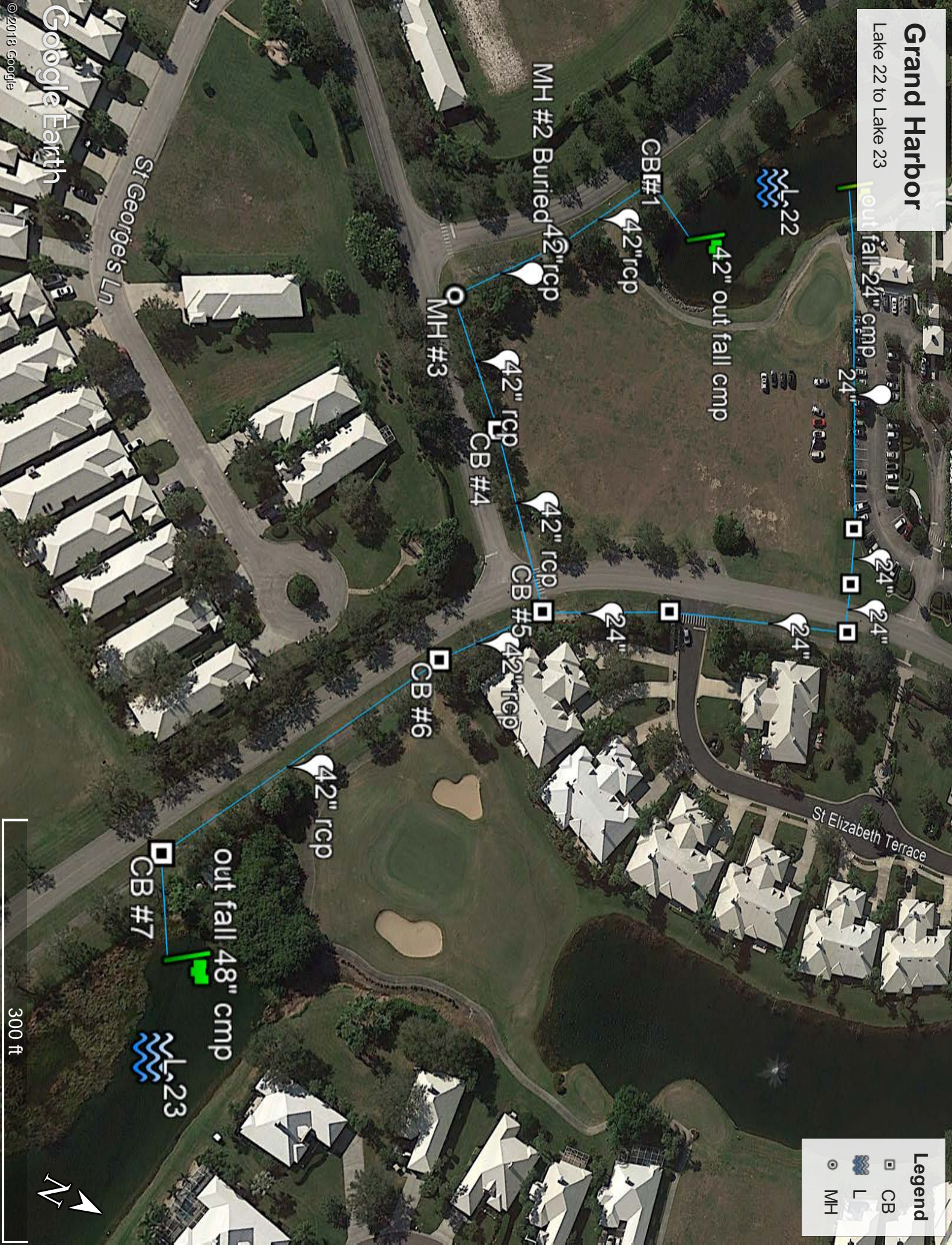
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Grand Harbor

Lake 22 to Lake 23



Legend

- CB
- L
- MH

**Lake 18 to Lake 13
Basin 3**

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 8, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 18 to Lake 13 Control
Station 3

Type of Pipe: CMP Diameter: 36" Length: 177'

Depth from surface to top of pipe: 3'

Describe access to the pipe: Entered at Lake 18 to CS#3 at Lake 13

End of pipe inspection made from (N.S.E.W): East to West

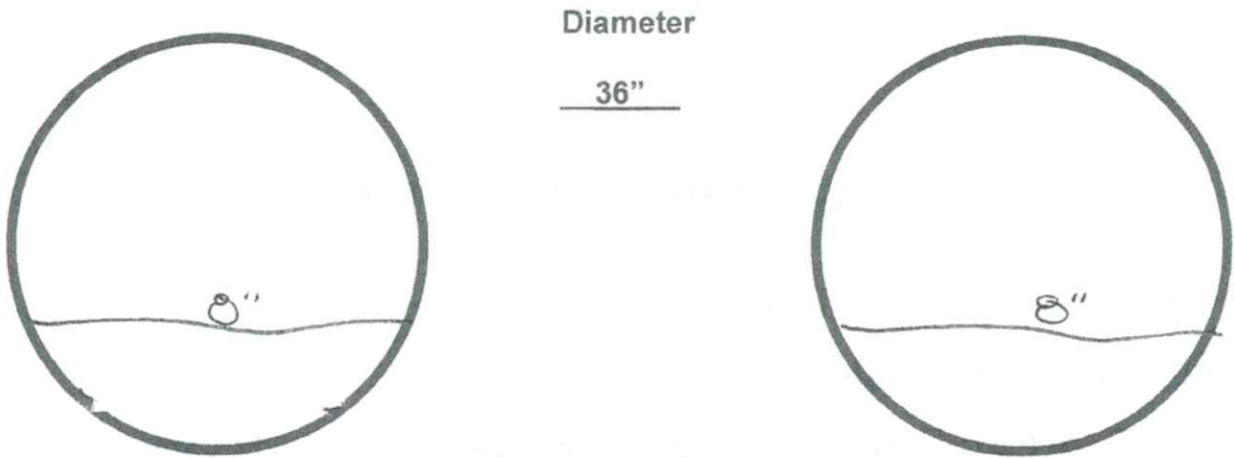
General Condition of Pipe: Dive team noted 8" of sediment throughout the length
of the pipe. Sediment consisting of mud and shells. Also noted a cement block at
the control station 3. Overall condition of the pipe appears to be good.

**Lake 18 to Lake 13
Basin 3**

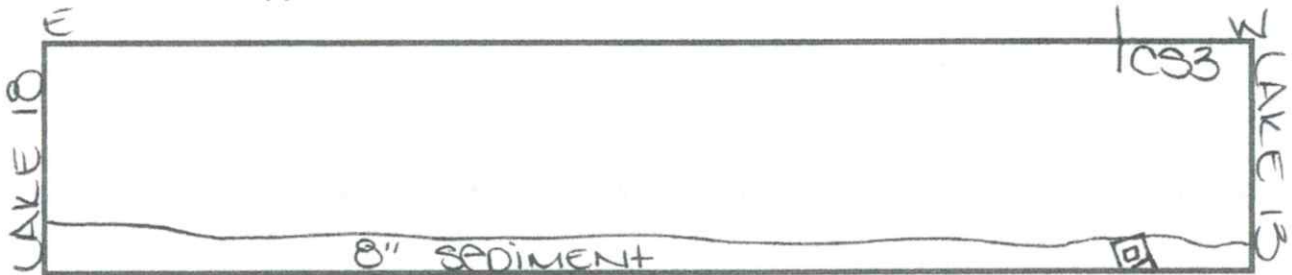
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Tyler Tender: William Supervisor: Chris

Name of Customer Representative on Site: David

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 8, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 25 to Control Structure 9

Type of Pipe: CMP Diameter: 32" Length: 50'

Depth from surface to top of pipe: 4'

Describe access to the pipe: Outfall in Lake 25

End of pipe inspection made from (N.S.E.W): North West

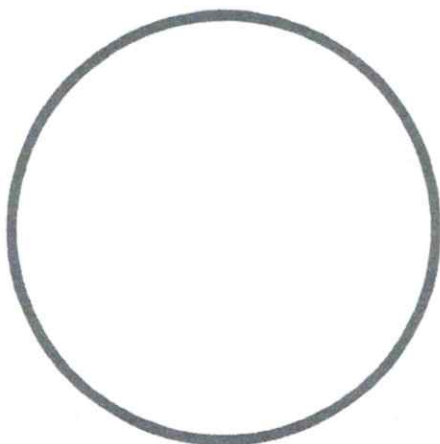
General Condition of Pipe: Dive team noted very little to no sediment throughout the length of the pipe. Overall condition of the pipe is good with a strong flow of water.

**Lake 25 to ESTUARY
River Village**

2 of 2

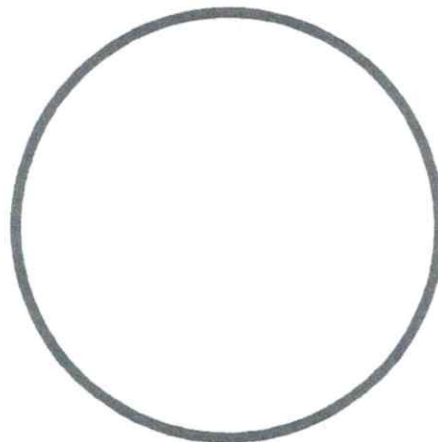
Illustrate Condition & Contents of Pipe

A. Cross Section:

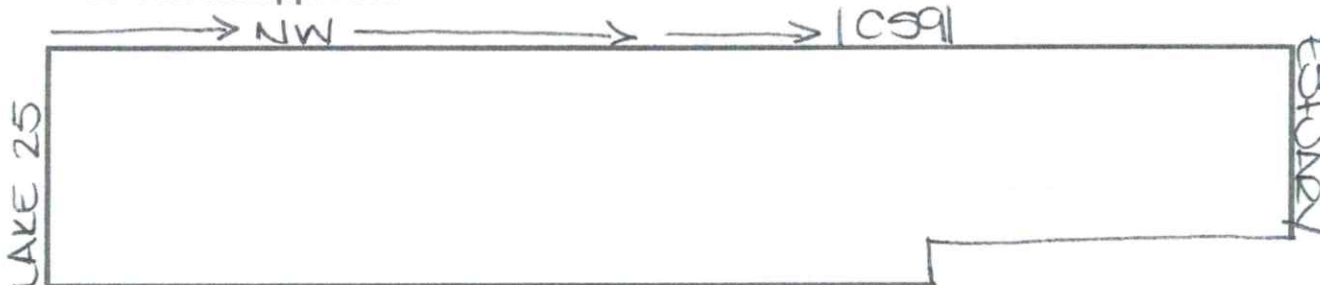


Diameter

32"



B. Culvert Approach



C. Culvert Profile: Round

Comments: Dive team dove this pipe up to CS #9. From CS#9 to Estuary was a dry pipe.

Diver: William **Tender:** Tyler **Supervisor:** Chris

Name of Customer Representative on Site: David

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Lake 25 to Lake 26
River Village

SHENANDOAH

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 8, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 25 to Lake 26

Type of Pipe: CMP Diameter: 48" Length: 260'

Depth from surface to top of pipe: 5'

Describe access to the pipe: Catch Basin between lakes

End of pipe inspection made from (N.S.E.W): South East

General Condition of Pipe: Dive team noted 6" of sediment throughout the pipe.

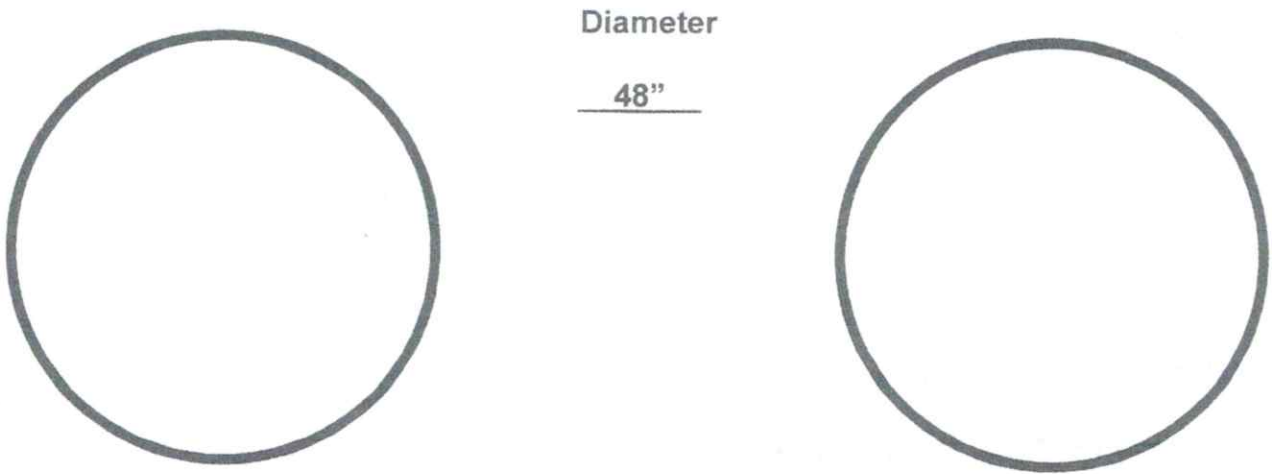
Overall condition of the pipe is good. Dive team reported a man hole between
lakes 25 and 26.

**Lake 25 to Lake 26
River Village**

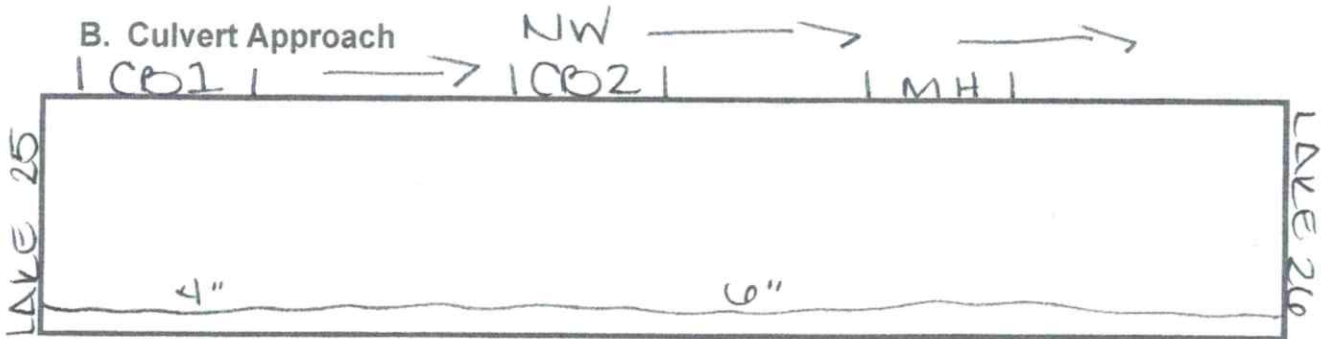
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: Dive team noted that the pipe started as CMP and transitioned into RCP at the 45 degree turn.

Diver: William **Tender:** Tyler **Supervisor:** Chris

Name of Customer Representative on Site: David

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 6, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 4 to Lake 5

Type of Pipe: CMP Diameter: 36" Length: 145'

Depth from surface to top of pipe: 4"

Describe access to the pipe: CMP located in Lake 4 passing through Lake 5

End of pipe inspection made from (N.S.E.W): South to North

General Condition of Pipe: Dive team noted 1' of sediment at the pipe entrance.

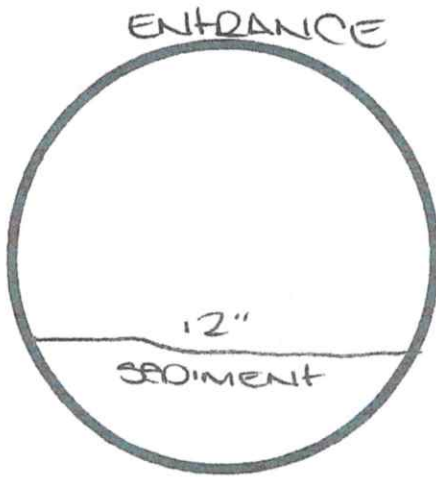
Sediment decreased to 3". Overall condition of the pipe is good.

Lake 4 to Lake 5
River Club

2 of 2

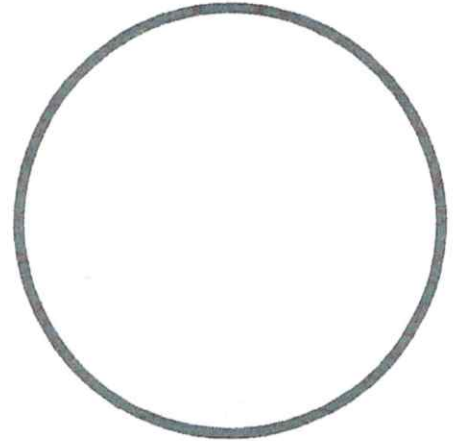
Illustrate Condition & Contents of Pipe

A. Cross Section:

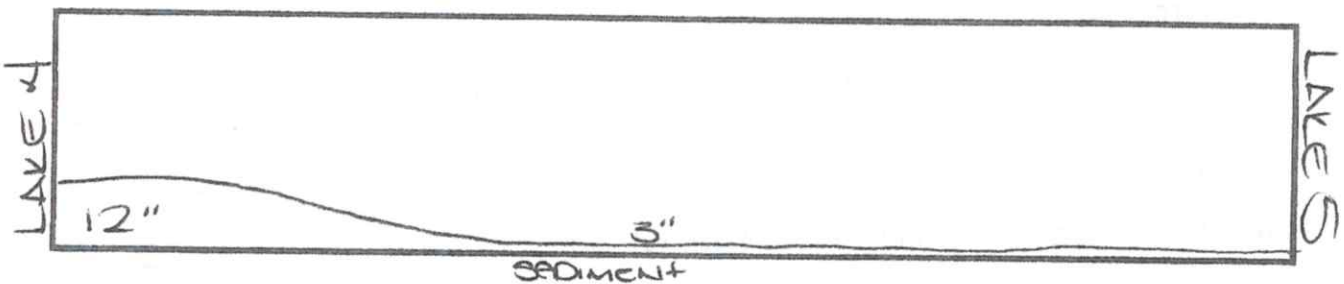


Diameter

36"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: William Tender: Tyler Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 8, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 8 to Outfall in Lake 9

Type of Pipe: RCP Diameter: 36" Length: 290'

Depth from surface to top of pipe: Catch Basin

Describe access to the pipe: Catch basin in Lake 8

End of pipe inspection made from (N.S.E.W): West to East

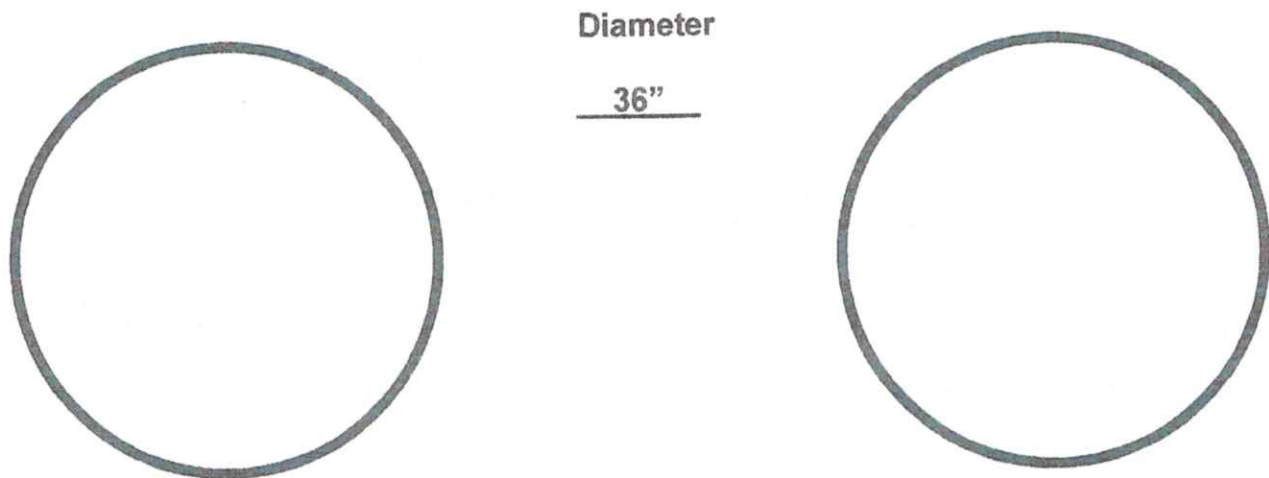
General Condition of Pipe: Dive team noted little to no sediment throughout the length of the pipe. Overall condition of the pipe is ok, with joints and concrete in ok condition. Good and steady flow of water through pipe. Dive team noted a manhole at 190' into the pipe.

Lake 8 to Lake 9
Victoria

2 of 2

Illustrate Condition & Contents of Pipe

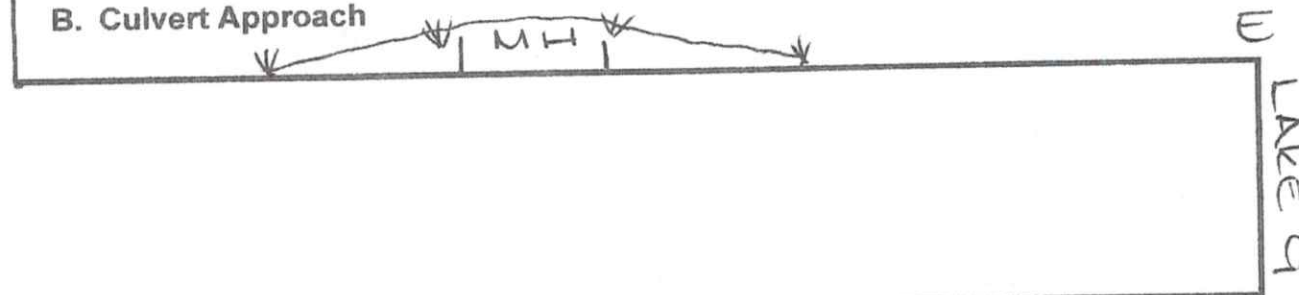
A. Cross Section:



LAKE 8

W

B. Culvert Approach



C. Culvert Profile: Round

Comments: The manhole located 190' into pipe was located and marked on the topside. The manhole is covered by grass and cannot be accessed unless unearthed.

Diver: William Tender: Tyler Supervisor: Chris

Name of Customer Representative on Site: David

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CULVERT PIPE INSPECTION FORM

Date of Inspection: 6 August, 2019

Customer Name: Grand Harbor Oak Harbor Trans.

Location of Pipe: L8 to Lake 9

Type of Pipe: CMP Diameter: 36" Length: 180'

Depth from surface to top of pipe: 1' at the outfall

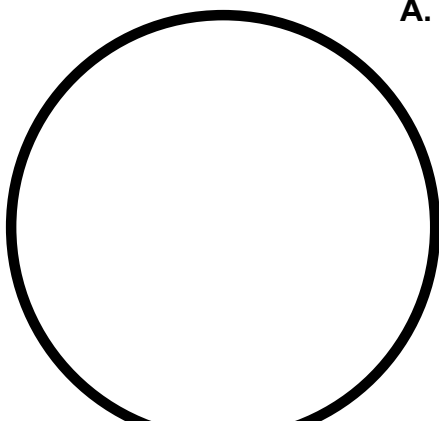
Describe access to the pipe: Lake 9 end has mound of sand at outfall that needs cleared to allow full flow

End of pipe inspection made from (N.S.E.W): Lake 8 to Lake 9

General Condition of Pipe: Diver noted pipe to br in fair condition

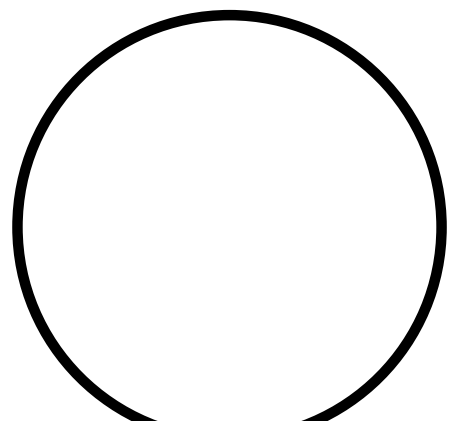
Illustrate Condition & Contents of Pipe

A. Cross Section:



Diameter

36"



B. Culvert Approach

C. Culvert Profile: Round

Comments: Outfall is inaccessible at lake 9

Diver: Dakota **Tender:** Tyler **Supervisor:** Chris

Name of Customer Representative on Site: David

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 6, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 9 to Lake 12

Type of Pipe: CMP Diameter: 36" Length: 80'

Depth from surface to top of pipe: 24"

Describe access to the pipe: 2' below surface South side of Lake 9

End of pipe inspection made from (N.S.E.W): North to South

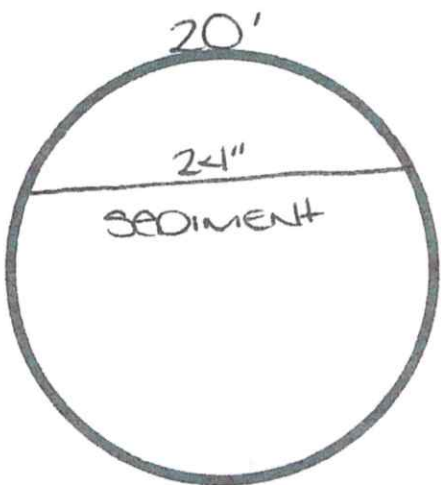
General Condition of Pipe: 12" of sediment at entrance of pipe. Sediment is a mixture of sand and shells. Dive team could not determine the condition of the pipe due to 24" of sediment blocking further access at 20' deep.

Lake 9 to Lake 12
Basin 2

2 of 2

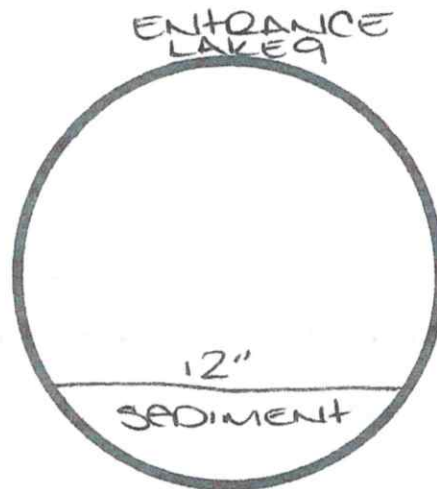
Illustrate Condition & Contents of Pipe

A. Cross Section:

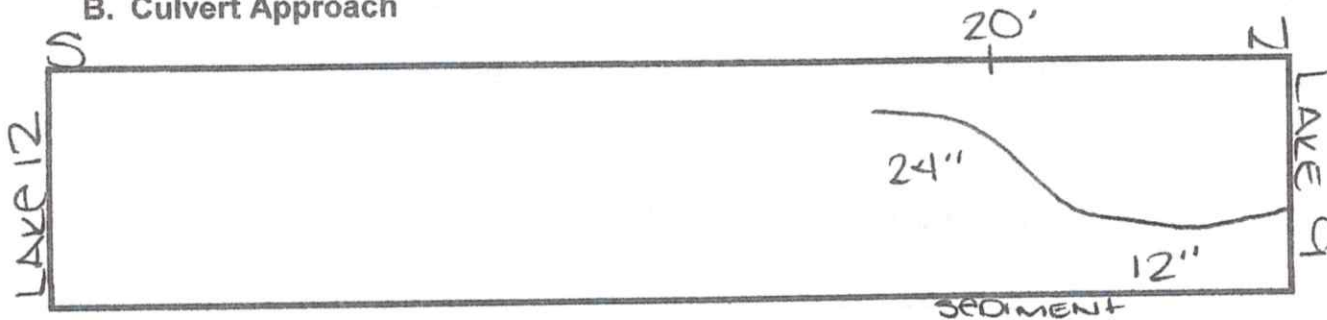


Diameter

36"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: William Tender: Tyler Supervisor: Chris

Name of Customer Representative on Site: David

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CULVERT PIPE INSPECTION FORM

Date of Inspection: 6 August, 2019

Customer Name: Grand Harbor Oak Harbor Trans.

Location of Pipe: L9 to Lake 12

Type of Pipe: CMP Diameter: 36" Length: 80'

Depth from surface to top of pipe: 1' at the outfall

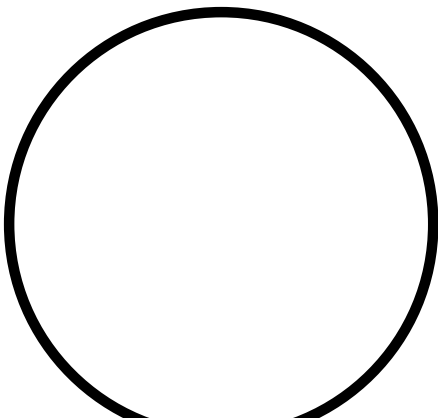
Describe access to the pipe: Cleaned pipe and found hole in pipe 30 feet from lake 9 end of pipe at 6 O'clock Position and bottom of pie is rusted and has small holes throughout pipe.

End of pipe inspection made from (N.S.E.W): North at lake 9

General Condition of Pipe: Diver noted that the pipe is heavily corroded

Throughout 60'clock position

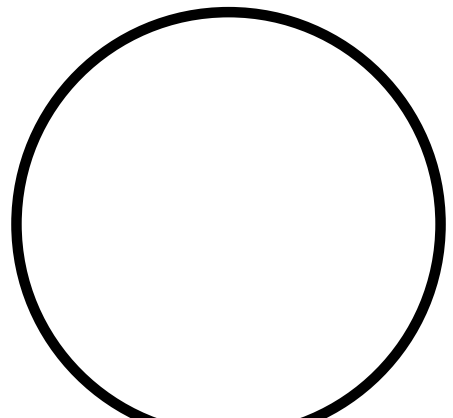
Illustrate Condition & Contents of Pipe



A. Cross Section:

Diameter

36"



B. Culvert Approach

C. Culvert Profile: Round

Comments: Outfall is inaccessible.

Diver: Dakota **Tender:** Tyler **Supervisor:** Chris

Name of Customer Representative on Site: David

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 7, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – L17 to L5

Type of Pipe: CMP Diameter: 36" Length:

Depth from surface to top of pipe: 3'

Describe access to the pipe: Outfall in Lake 17

End of pipe inspection made from (N.S.E.W): North

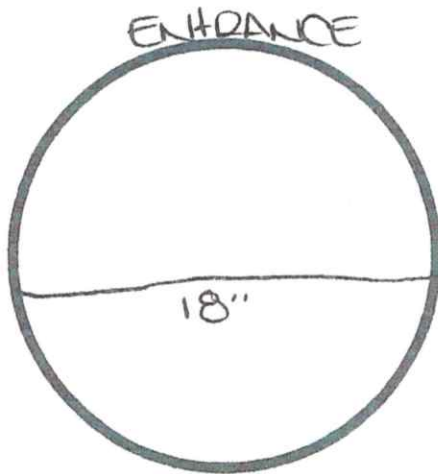
General Condition of Pipe: Dive team noted 18" of sediment at the entrance of the
Pipe. Sediment consisting of sand and shells. Obstruction at 25' into the pipe,
large boulder. 3" of sediment throughout the length of the pipe. Overall condition
of the pipe is good.

Lake 17 to Lake 5
River Club

2 of 2

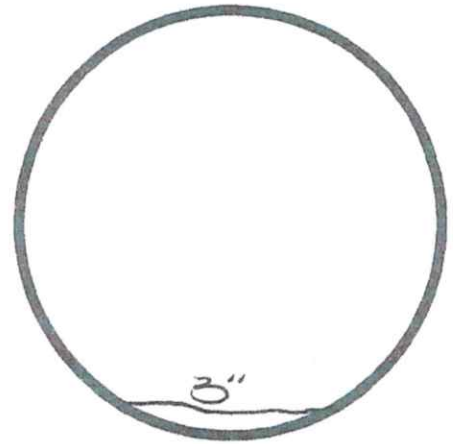
Illustrate Condition & Contents of Pipe

A. Cross Section:

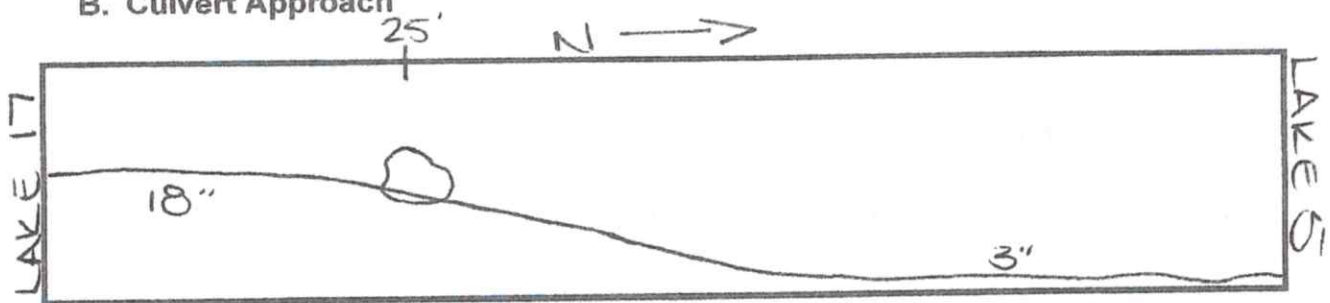


Diameter

36"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Tyler

Tender: William

Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 9, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 23 to Control Structure 7

Type of Pipe: CMP Diameter: 48" Length: 80'

Depth from surface to top of pipe: 3'

Describe access to the pipe: Lake 23 Outfall

End of pipe inspection made from (N.S.E.W): North

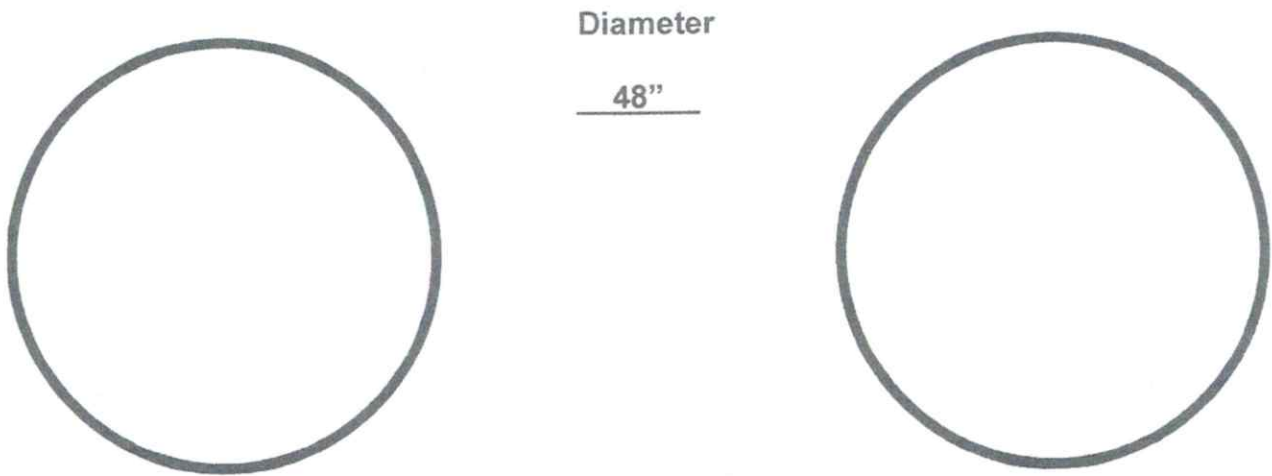
General Condition of Pipe: Dive team noted very little to no sediment throughout the length of the pipe. Overall condition of the pipe is good. Strong flow of water.

Lake 23 to CS7
OH Basin 3

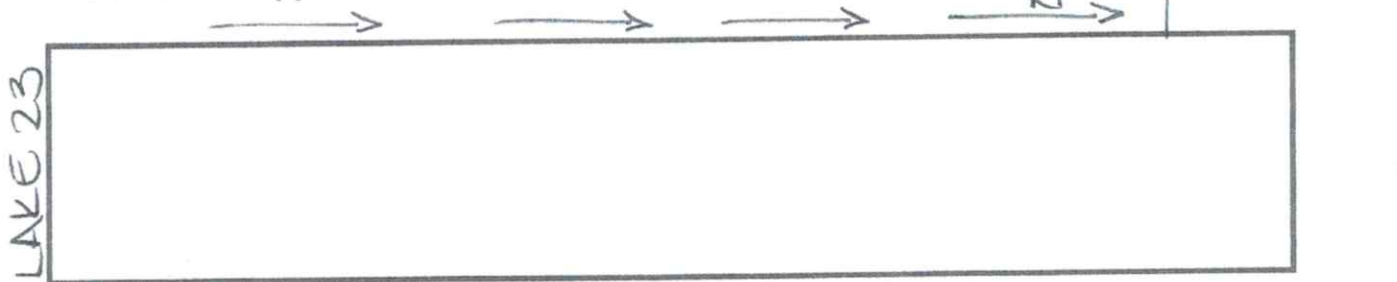
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Tyler Tender: William Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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CULVERT PIPE INSPECTION FORM

Date of Inspection: December 12, 2019

Customer Name: Shenandoah

Location of Pipe: Control Station 7 to Estuary

Type of Pipe: CMP Diameter: 42" Length: 35'

Depth from surface to top of pipe: 11"

Describe access to the pipe: Pipe is on Bottom of lake 4' from the Shore.

End of pipe inspection made from (N.S.E.W): East to West

General Condition of Pipe: Pipe is a CMP pipe in good condition, with a diameter of 42", is 35' in length, with 1" of sediment buildup, and has light marine growth.

**Double Culvert #2
Estuary**

SHENANDOAH

CONSTRUCTION

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 7, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Mangrove Esterian double 2 West
and East

Type of Pipe: CMP Diameter: 72" Length: 90' x2

Depth from surface to top of pipe: 0"

Describe access to the pipe: Outfall in mangroves.

End of pipe inspection made from (N.S.E.W): East to West

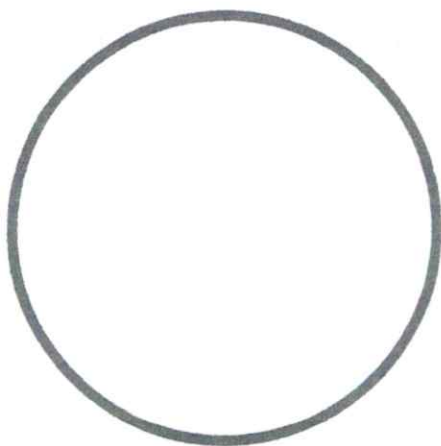
General Condition of Pipe: Dive team noted 6 – 8" of sediment throughout the
length of the pipe. Overall condition of the pipe is good. With no obstructions.

Double Culvert #2
Estuary

2 of 2

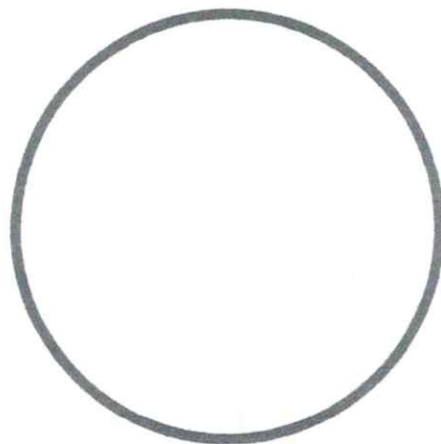
Illustrate Condition & Contents of Pipe

A. Cross Section:

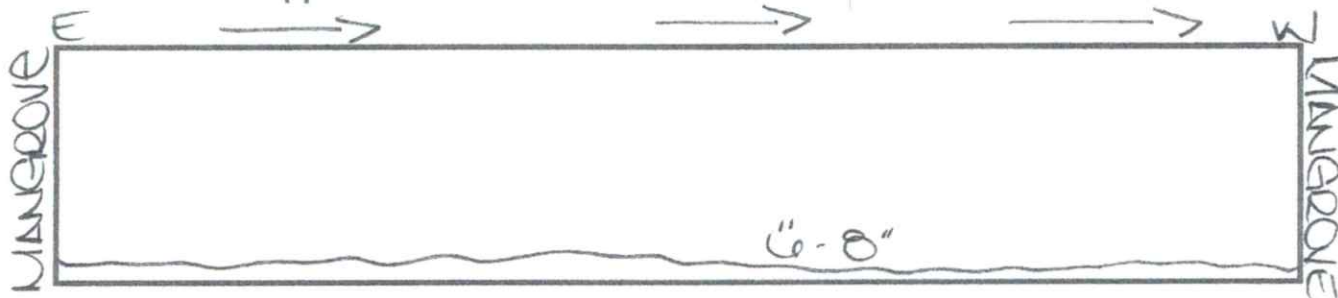


Diameter

72"



B. Culvert Approach



C. Culvert Profile: Round

Comments: Very low visibility inside of the pipe.

Diver: William **Tender:** Tyler **Supervisor:** Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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Double Culvert #3
Estuary

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 6, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Mangrove Esterian double 3 East
pipe

Type of Pipe: CMP

Diameter: 72"

Length: 90'

Depth from surface to top of pipe: 0"

Describe access to the pipe: Outfall in mangroves.

End of pipe inspection made from (N.S.E.W): South to North

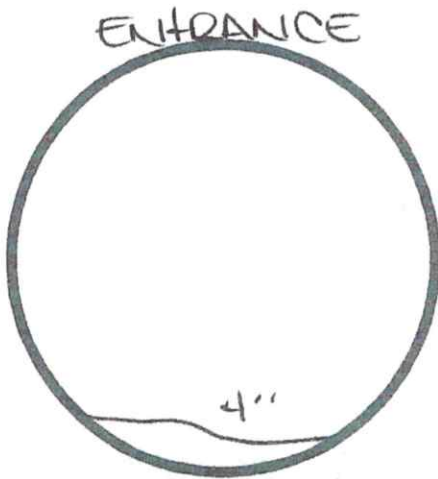
General Condition of Pipe: Dive team noted 4" of sediment at the entrance of the
pipe. Also noted tree branches and roots in the pipe. Sediment consists of sand
and leaves. Sediment is 6" to 8" throughout the length of the pipe.

**Double Culvert #3
Estuary**

2 of 2

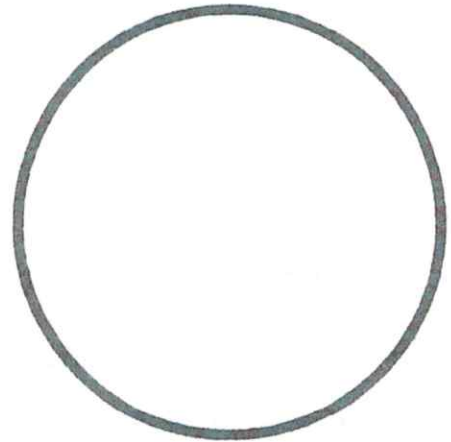
Illustrate Condition & Contents of Pipe

A. Cross Section:

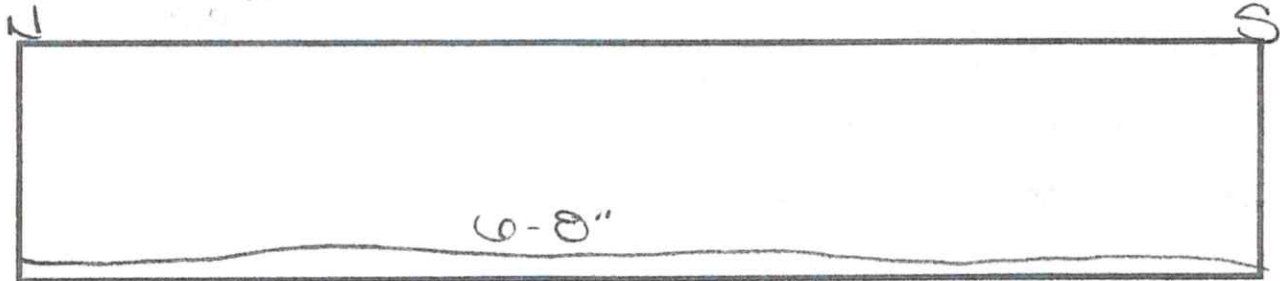


Diameter

72"



B. Culvert Approach



C. Culvert Profile: Round

Comments: Very low visibility inside of the pipe.

Diver: Tyler

Tender: William

Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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**Double Culvert #3
Estuary**

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 7, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Double 3 West

Type of Pipe: CMP Diameter: 72" Length: 90'

Depth from surface to top of pipe: Exposed entry

Describe access to the pipe: South side of Esterian Mangrove

End of pipe inspection made from (N.S.E.W): North to South

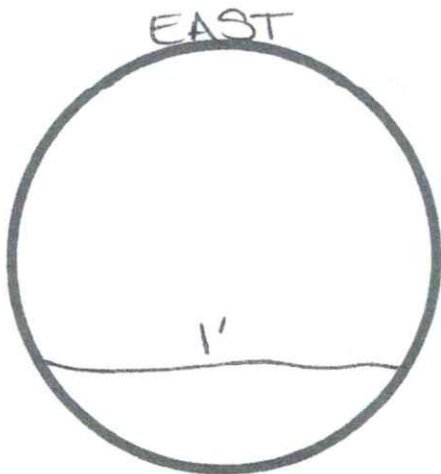
General Condition of Pipe: Dive team noted approximately 12" of sediment at the entrance. Over all condition of pipe is good. Sediment between 8 and 12" throughout pipe.

**Double Culvert #3
Estuary**

2 of 2

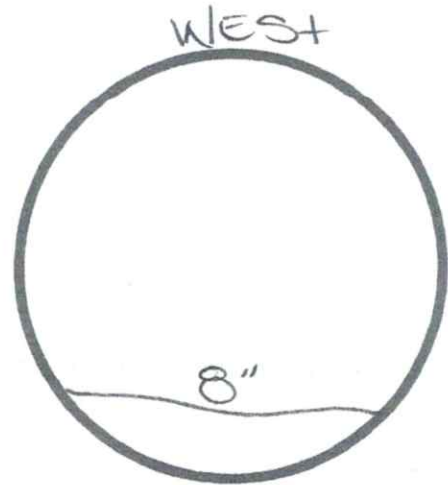
Illustrate Condition & Contents of Pipe

A. Cross Section:

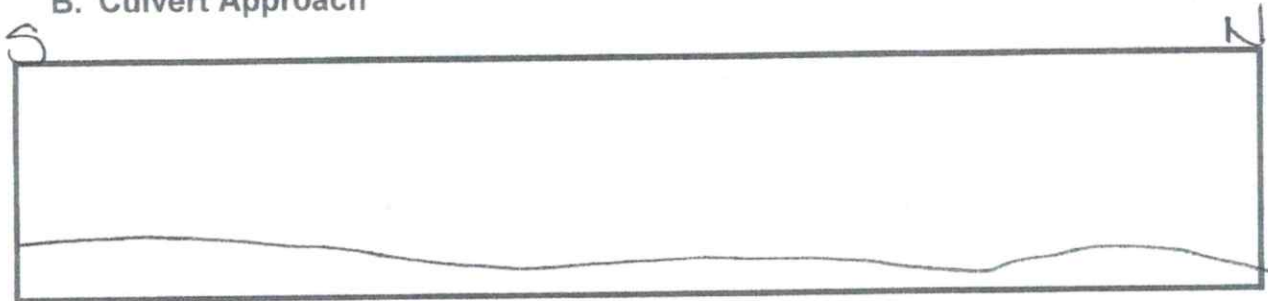


Diameter

72"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Tyler **Tender:** William **Supervisor:** Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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**Double Culvert #1
Estuary**

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 6, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Mangrove Esterian double 1 East
and West pipe South side heading North

Type of Pipe: CMP Diameter: 72" Length: 120' x2

Depth from surface to top of pipe: 0"

Describe access to the pipe: North side of Mangrove Esterian double 1

End of pipe inspection made from (N.S.E.W): North to South

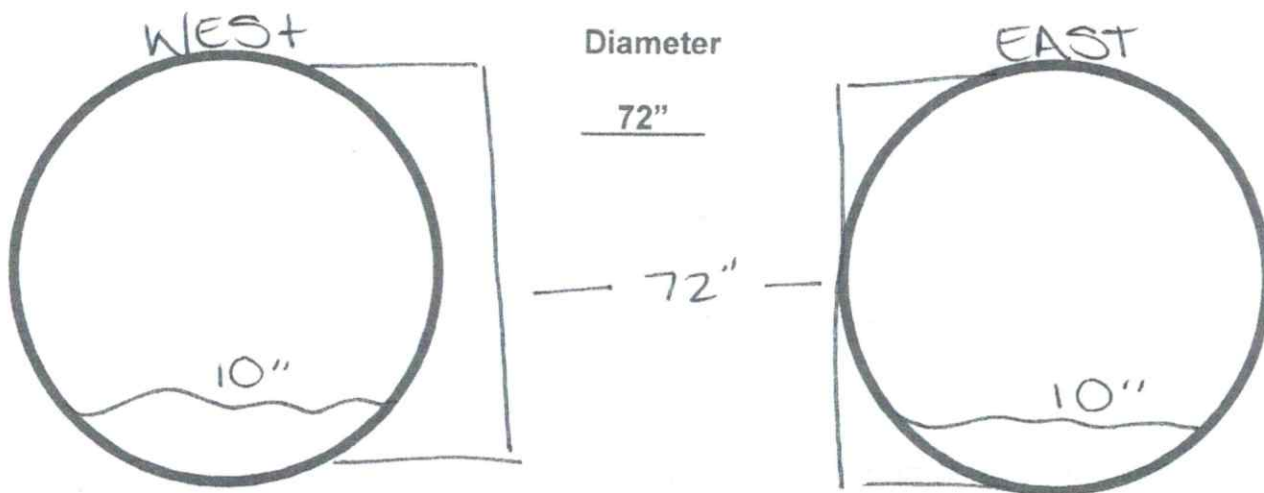
General Condition of Pipe: Dive team noted 10 inches of sediment throughout
both East and West pipes. Overall condition is good with no debris or
obstructions.

**Double Culvert #1
Estuary**

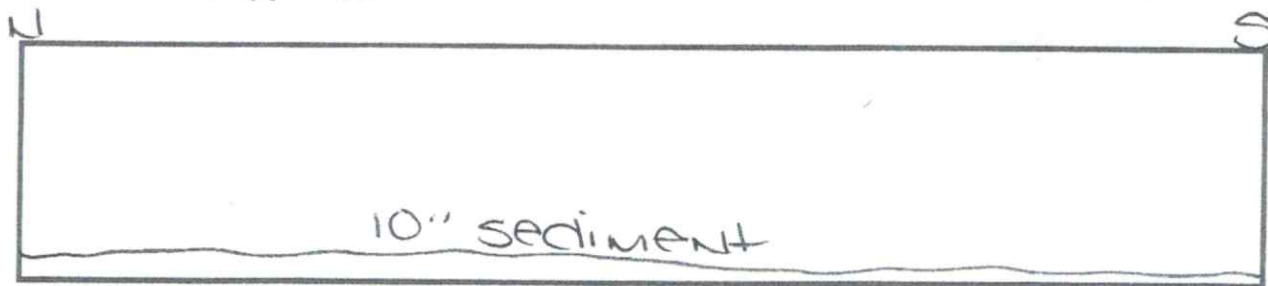
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: William **Tender:** Tyler **Supervisor:** Chris

Name of Customer Representative on Site: David _____

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – Mangroves to Lake 18

Type of Pipe: CMP Diameter: 48" Length: 250'

Depth from surface to top of pipe: 19"

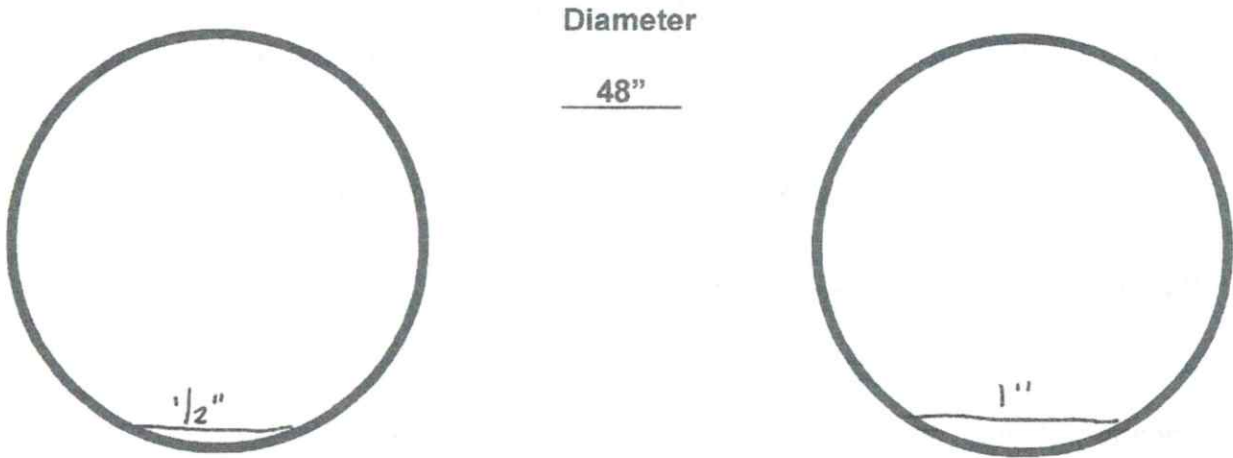
Describe access to the pipe: Control Structure 5 to Control Structure 4

End of pipe inspection made from (N.S.E.W): North to South

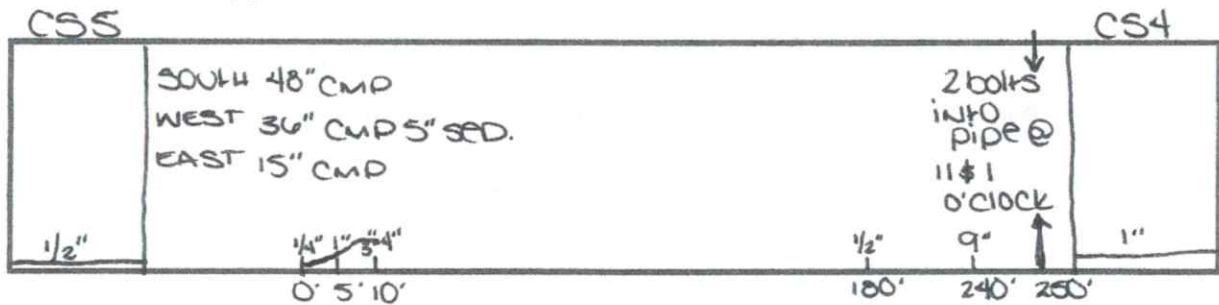
General Condition of Pipe: Diver noted ½" to 9" pf sediment throughout the
length of the pipe. Also noted marine growth along the sides and minor
corrosion.

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: Diver noted two bolts protruding into the pipe 10" in from control structure 4 in the 11 and 1 O'clock position.

Diver: Dakota Tender: _____ Supervisor: Chris

Name of Customer Representative on Site: David G.

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – Mangroves to Control Structure 5

Type of Pipe: CMP Diameter: 48" Length: 120'

Depth from surface to top of pipe: 9"

Describe access to the pipe: Outfall in Mangroves

End of pipe inspection made from (N.S.E.W): North East to South West

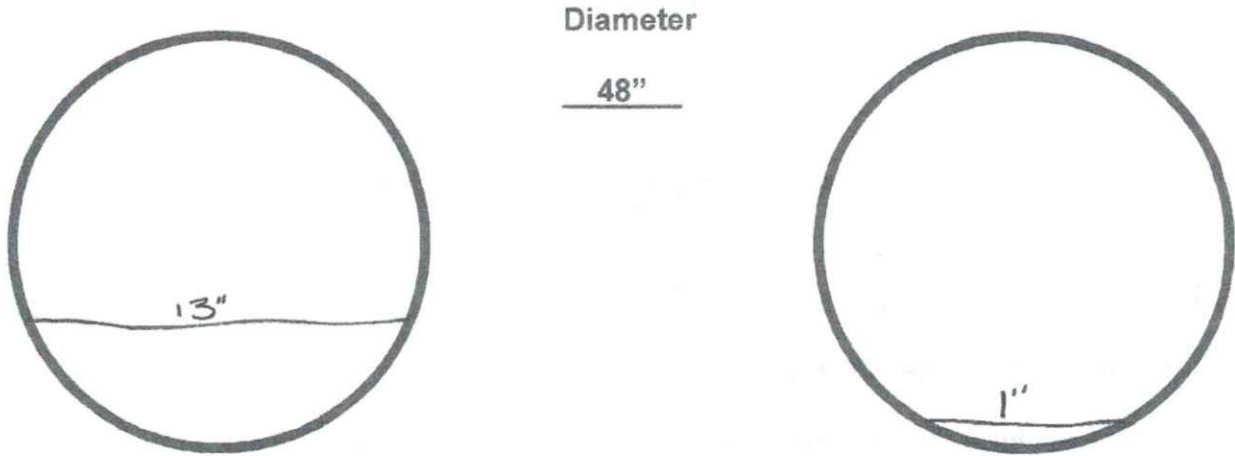
General Condition of Pipe: Diver noted the sediment levels increased heading toward CS5 then decreased. Diver also noted heavy marine growth along the sides.

Lake 18 - Estuary

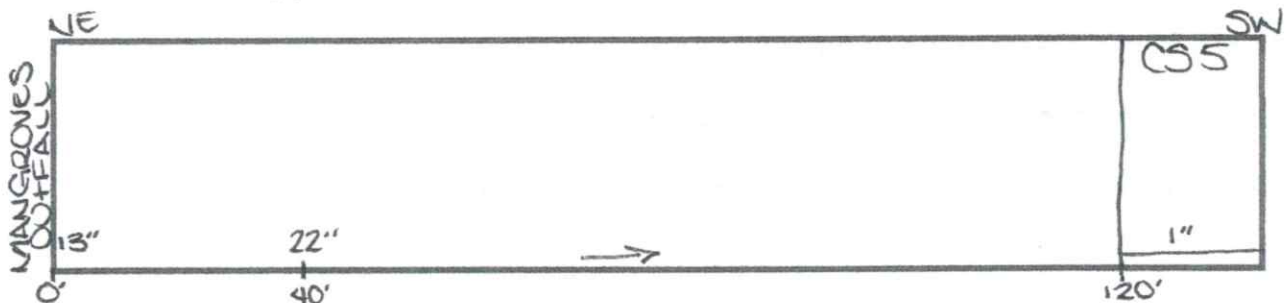
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Dakota Tender: _____ Supervisor: Chris

Name of Customer Representative on Site: David G.

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – Lake 09 to Control Structure 2

Type of Pipe: CMP Diameter: 24" Length: _____

Depth from surface to top of pipe: 9"

Describe access to the pipe: Lake 9 Outfall

End of pipe inspection made from (N.S.E.W): West to East

General Condition of Pipe: Diver noted moderate growth on the sides of the pipe.
Pipe collapsed 19' into pipe from the 11 to 2 O' clock position.

**Lake 9 - Lake 14
Basin 2 to Basin 3**

2 of 2

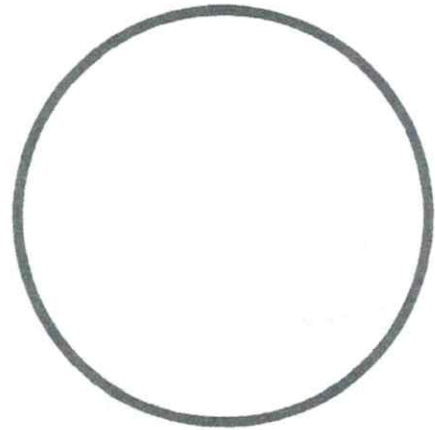
Illustrate Condition & Contents of Pipe

A. Cross Section:

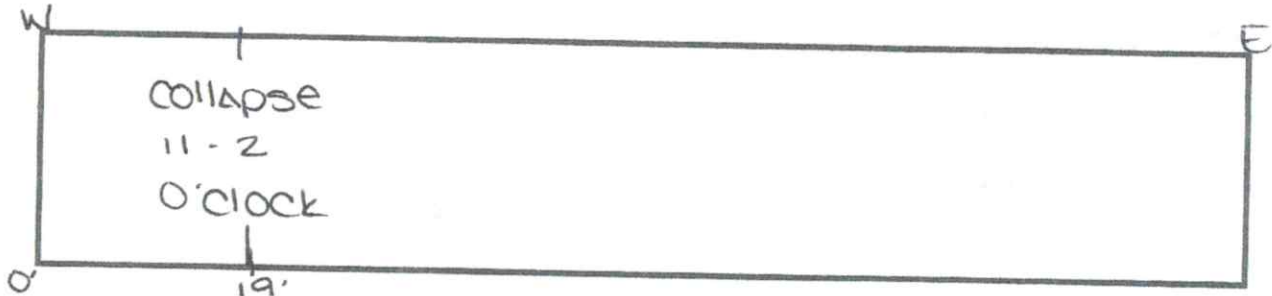


Diameter

24 "



B. Culvert Approach



C. Culvert Profile: Round

Comments: Diver was unable to continue inspection past 19' due to pipe collapse.

Diver: Dakota **Tender:** _____ **Supervisor:** Chris

Name of Customer Representative on Site: David G.

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – Catch Basin 1 to Control Structure 2

Type of Pipe: CMP Diameter: 24" Length: 75'

Depth from surface to top of pipe: 11"

Describe access to the pipe: Catch Basin 1 to Control Structure 2

End of pipe inspection made from (N.S.E.W): East to West

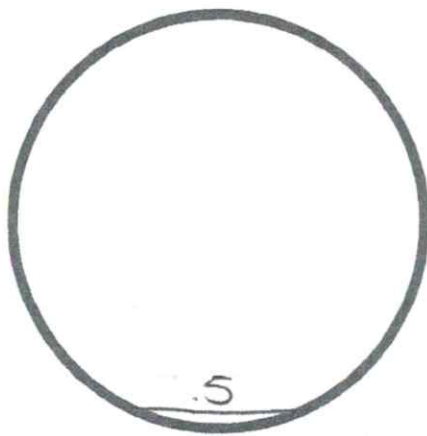
General Condition of Pipe: Diver noted minor cracking at the mud work at the mouth of the pipe in CB1. Also noted moderate growth.

**Lake 9 - Lake 14
Basin 2 to Basin 3**

2 of 2

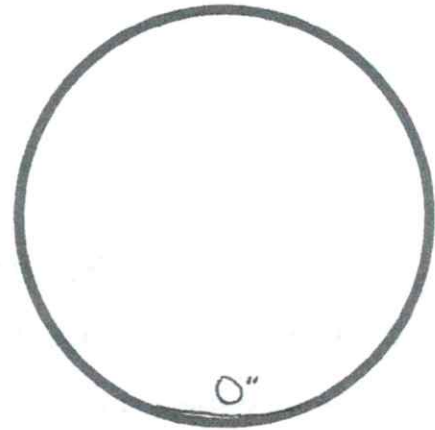
Illustrate Condition & Contents of Pipe

A. Cross Section:

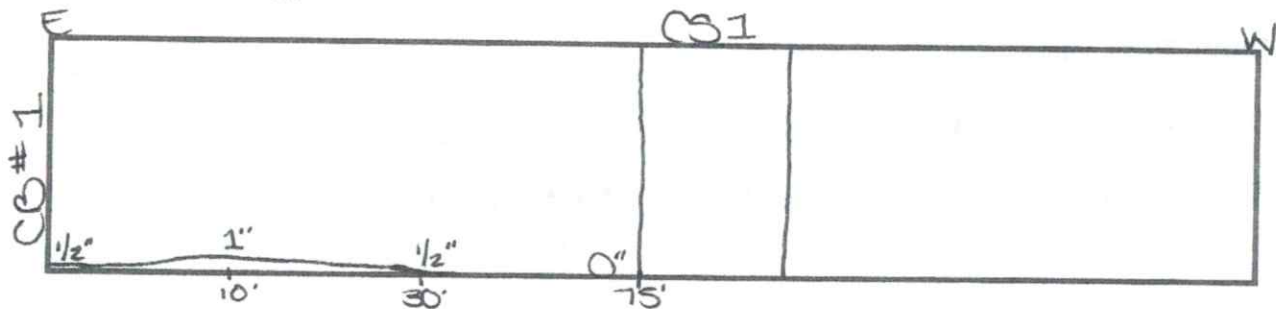


Diameter

24"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Dakota Tender: _____ Supervisor: Chris

Name of Customer Representative on Site: David G.

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – Lake 9 to Lake 14

Type of Pipe: CMP Diameter: 36" Length: 100'

Depth from surface to top of pipe: + 23" out of water

Describe access to the pipe: Catch Basin 1

End of pipe inspection made from (N.S.E.W): West to East

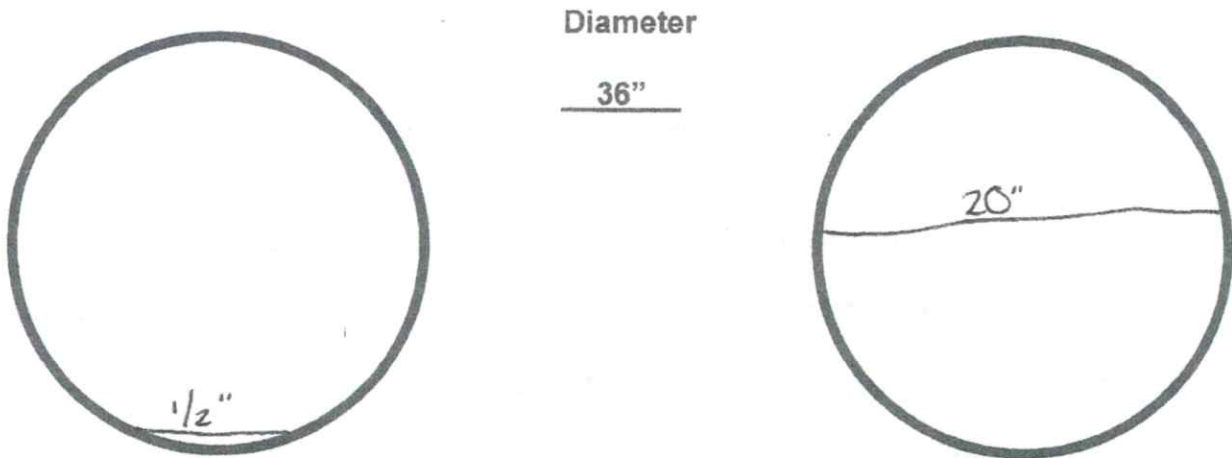
General Condition of Pipe: Diver noted that the sediment rose from 1/2" to 20"
throughout the length of the pipe. Also noted minor marine growth along the
sides of the pipe.

**Lake 9 - Lake 14
Basin 2 to Basin 3**

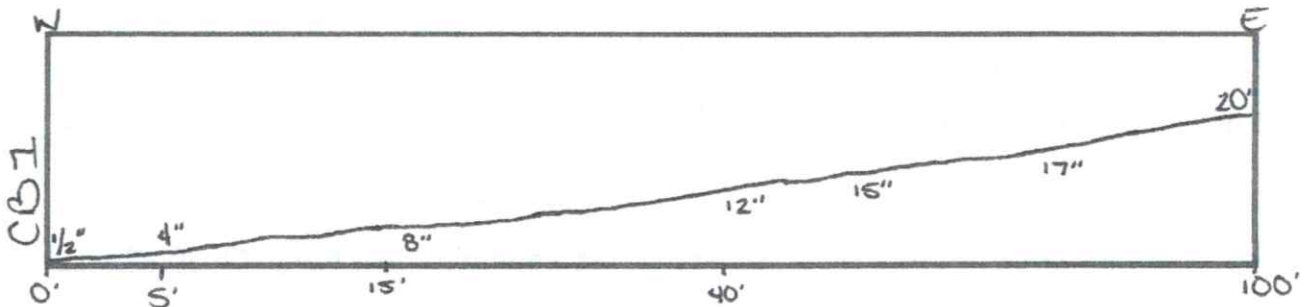
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Dakota Tender: _____ Supervisor: Chris

Name of Customer Representative on Site: David G.

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – Lake 10 to Control Structure 1

Type of Pipe: CMP Diameter: 60" Length: 20'

Depth from surface to top of pipe: 8"

Describe access to the pipe: Outfall at Lake 10

End of pipe inspection made from (N.S.E.W): South West to North East

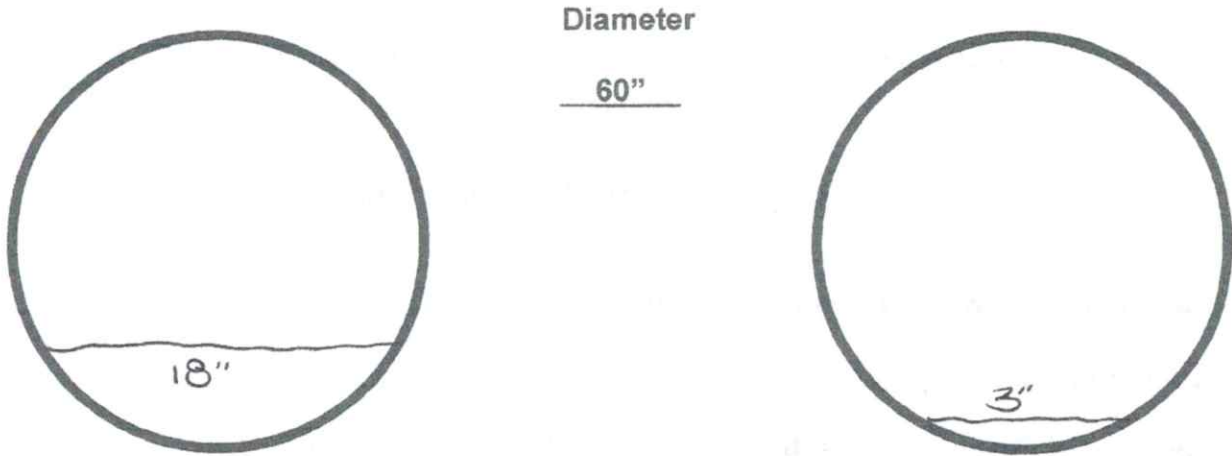
General Condition of Pipe: Diver noted a rebar trash rack at Lake 10 outfall, heavy corrosion on the trash rack along with heavy marine growth and mild corrosion. Control structure 1 has some rebar exposed. Diver also noted the sediment levels decreased throughout the pipe.

**Lake 10 - Lake 11
Basin 1 to Basin 2**

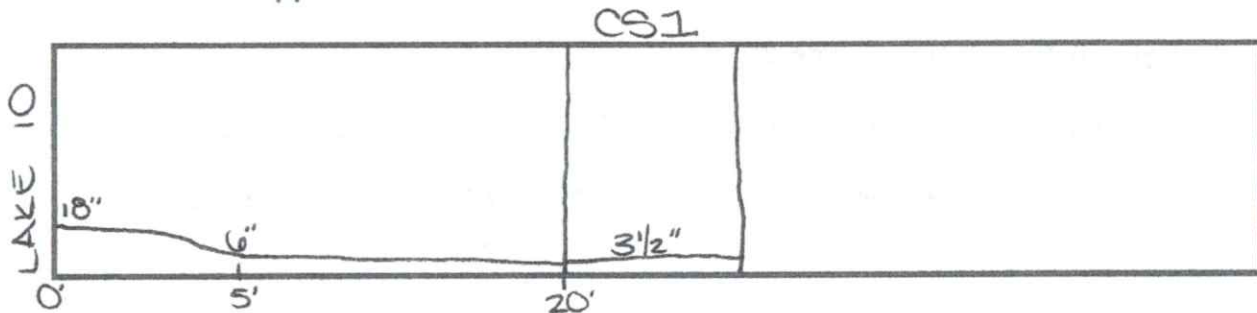
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Dakota Tender: _____ Supervisor: Chris

Name of Customer Representative on Site: David G.

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – Lake 10 to Lake 11

Type of Pipe: RCP Diameter: 54" Length: 212'

Depth from surface to top of pipe: + 10" out of water

Describe access to the pipe: Catch Basin 1

End of pipe inspection made from (N.S.E.W): South West to North East

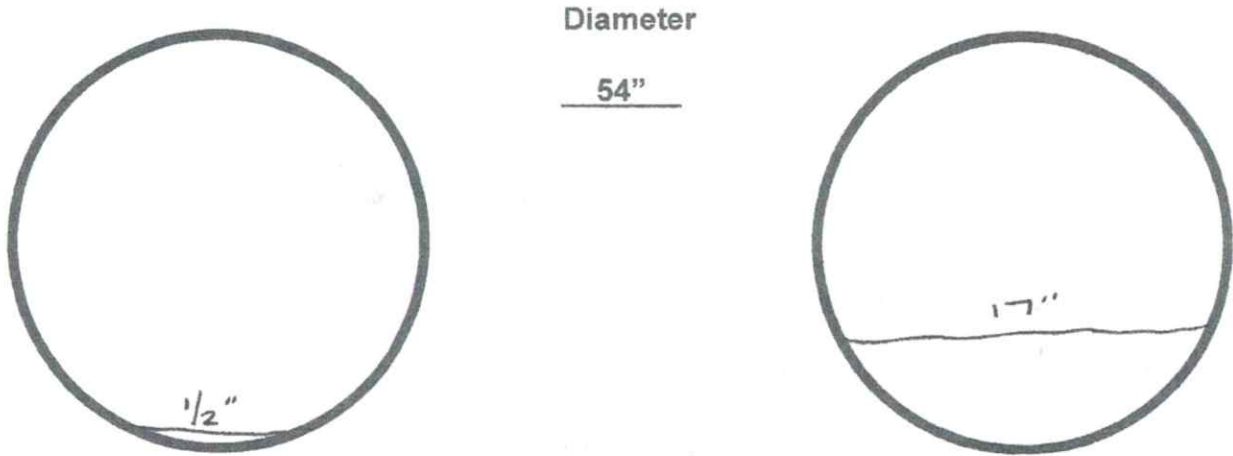
General Condition of Pipe: Control structure 1 has cracking around the pipe on
the structure wall. Diver noted ½" to 22" of sediment and moderate growth
throughout the pipe. Also noted mild cracking on the walls of catch basin 1.

Lake 10 - Lake 11
Basin 1 to Basin 2

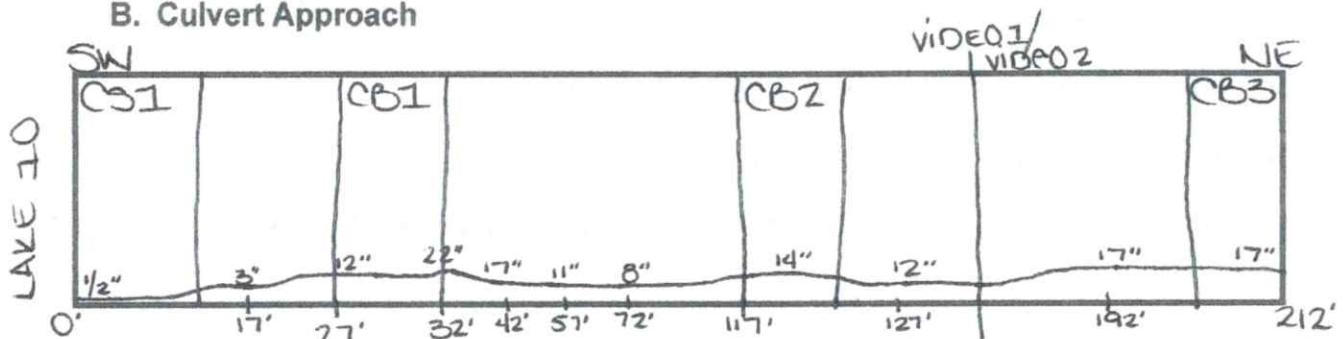
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Dakota Tender: _____ Supervisor: Chris

Name of Customer Representative on Site: David G.

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – Lake 10 to Lake 11

Type of Pipe: RCP Diameter: 54" Length: 462'

Depth from surface to top of pipe: 2"

Describe access to the pipe: Catch Basin 3

End of pipe inspection made from (N.S.E.W): South West to North East

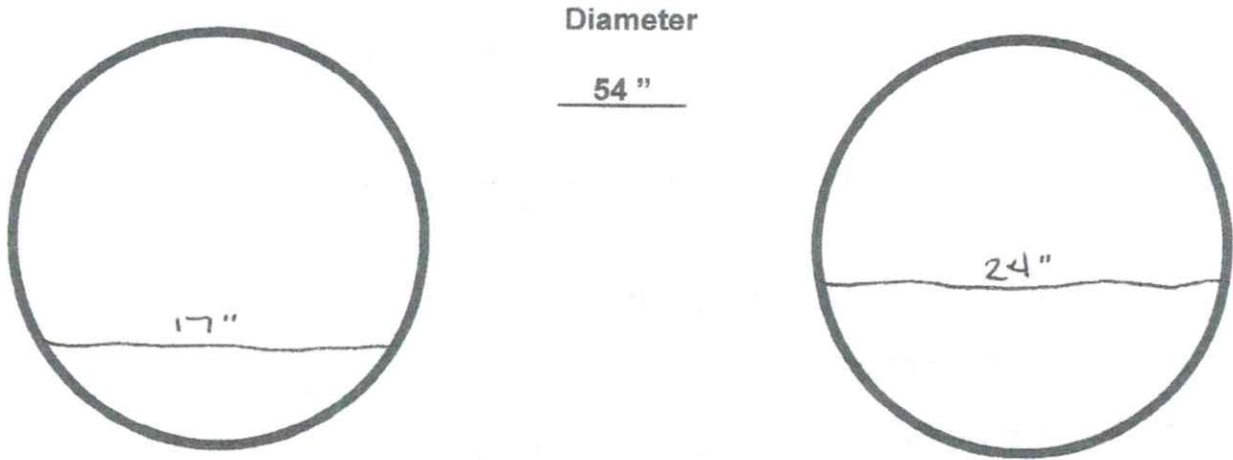
General Condition of Pipe: Diver noted 2" – 2' of sediment throughout the length of the pipe along with moderate growth and minor corrosion. Overall condition of the pipe appears to be good. Diver also noted that the sediment build up at outfall in Lake 11 is natural bottom and is half up the sides of the pipe covering 50%.

**Lake 10 - Lake 11
Basin 1 to Basin 2**

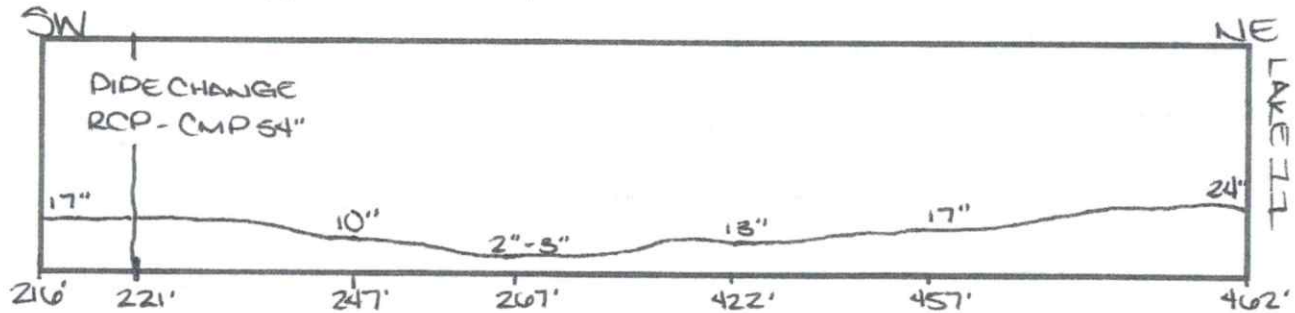
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: Diver noted that the pipe changes from RCP to 54" CMP at 221'.

All linear footage is measured from control Structure 1.

Diver: Dakota Tender: _____ Supervisor: Chris

Name of Customer Representative on Site: David G.

Phone: (954) 975-0098

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**Double Culvert #5
Estuary**

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – North East Double #5

Type of Pipe: CMP Diameter: 54" Length: N/A

Depth from surface to top of pipe: 3.5"

Describe access to the pipe: Man Hole A

End of pipe inspection made from (N.S.E.W): South East to North West

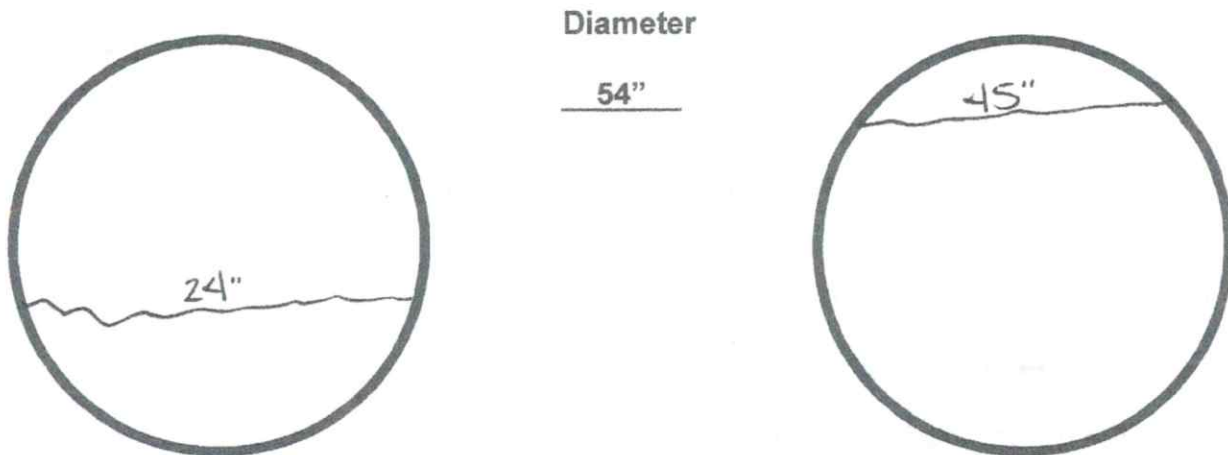
General Condition of Pipe: Diver noted 24" of sediment at the South East outfall along with minor growth. Also noted the pipe changed to 42" CMP after Manhole A. Sediment level rose to 26" after manhole A and continued to rise to 28" at 37' into the pipe. Diver was unable to inspect past 37' due to sediment levels.

**Double Culvert #5
Estuary**

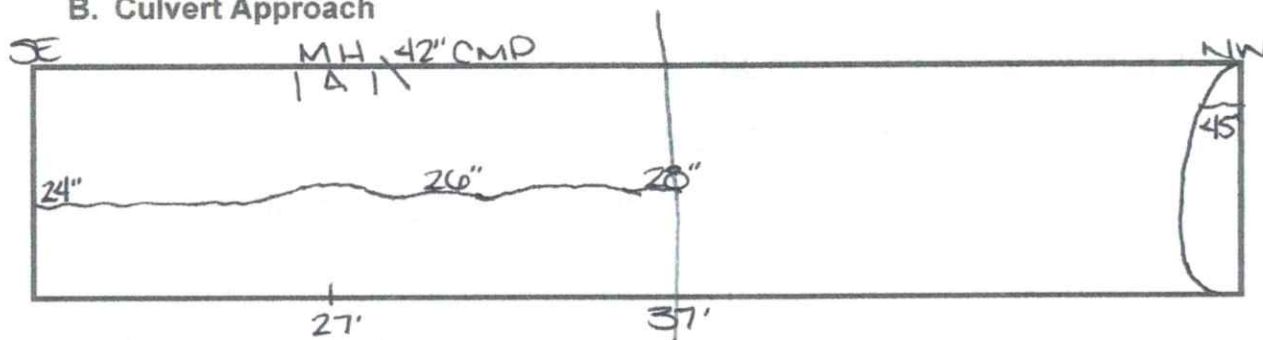
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: Diver located outfall and noted 45\"
to enter the pipe at the outfall.

Diver: Dakota **Tender:** _____ **Supervisor:** Chris

Name of Customer Representative on Site: David G.

Phone: (954) 975-0098

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**Double Culvert #5
Estuary**

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – South West Double #5

Type of Pipe: CMP Diameter: 54" Length: N/A

Depth from surface to top of pipe: 3.5"

Describe access to the pipe: Man Hole B

End of pipe inspection made from (N.S.E.W): South East to North West

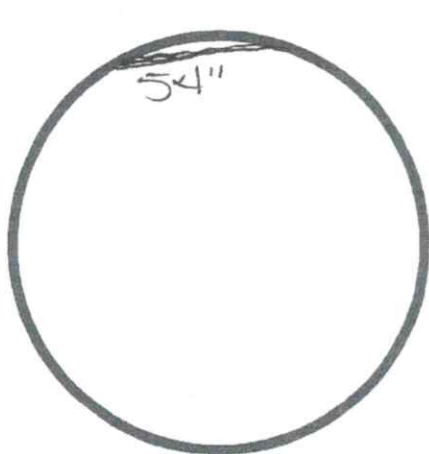
General Condition of Pipe: Dive team noted that the pipe is completely full of mud at the entrance.

**Double Culvert #5
Estuary**

2 of 2

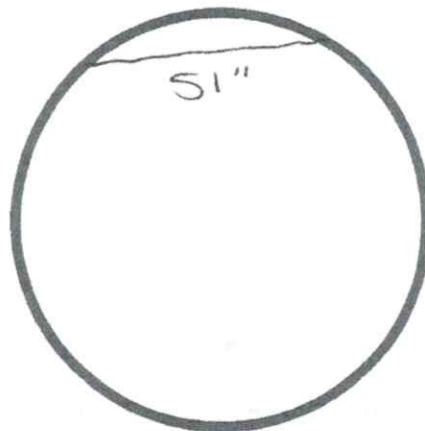
Illustrate Condition & Contents of Pipe

A. Cross Section:

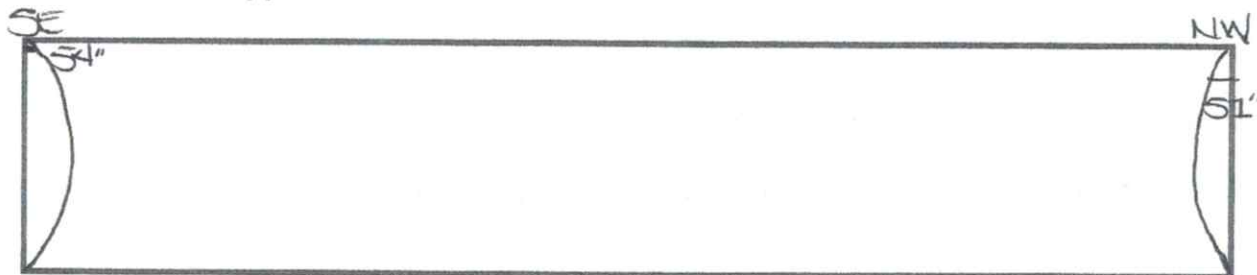


Diameter

54"



B. Culvert Approach



C. Culvert Profile: Round

Comments: Diver located outfall and noted 51" of sediment. Diver was unable to enter the pipe at either end.

Diver: Dakota **Tender:** Jacob **Supervisor:** _____

Name of Customer Representative on Site: _____

Phone: (954) 975-0098

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – Lake 07 – 12

Type of Pipe: CMP Diameter: 24" Length: 176'

Depth from surface to top of pipe: 6"

Describe access to the pipe: Not accessed located outfall

End of pipe inspection made from (N.S.E.W): _____

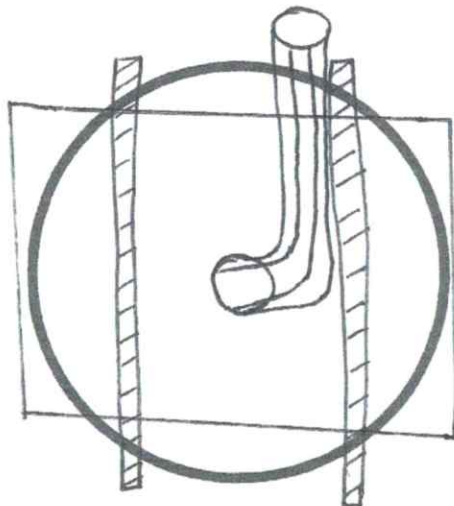
General Condition of Pipe: Dive team noted that the outfall has a homemade control structure. The control structure is not flush against the mouth of the pipe, and is not secured to the pipe. Diver also noted a 4" gap at the 6 O'clock position.

**Lake 7 to Lake 12
Basin 2**

2 of 2

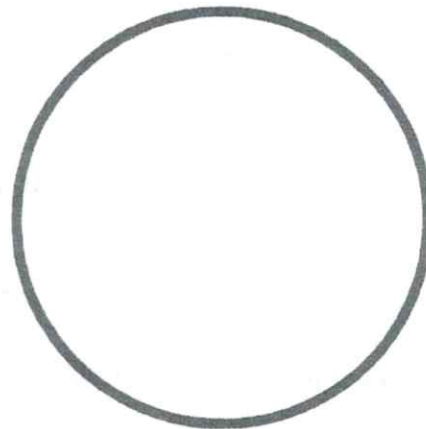
Illustrate Condition & Contents of Pipe

A. Cross Section:

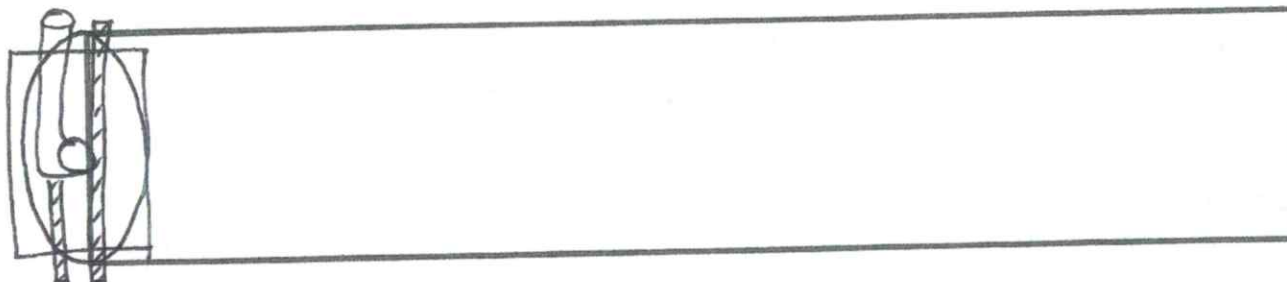


Diameter

24"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Dakota

Tender: Jacob

Supervisor: _____

Name of Customer Representative on Site: _____

Phone: (954) 975-0098

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**Lake 30 to Lake 21
Basin 3**

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CULVERT PIPE INSPECTION FORM

Date of Inspection: September 13, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor – Lake 30 – 21

Type of Pipe: CMP Diameter: 24" Length: 325'

Depth from surface to top of pipe: 60"

Describe access to the pipe: Outfall – Did not enter

End of pipe inspection made from (N.S.E.W): _____

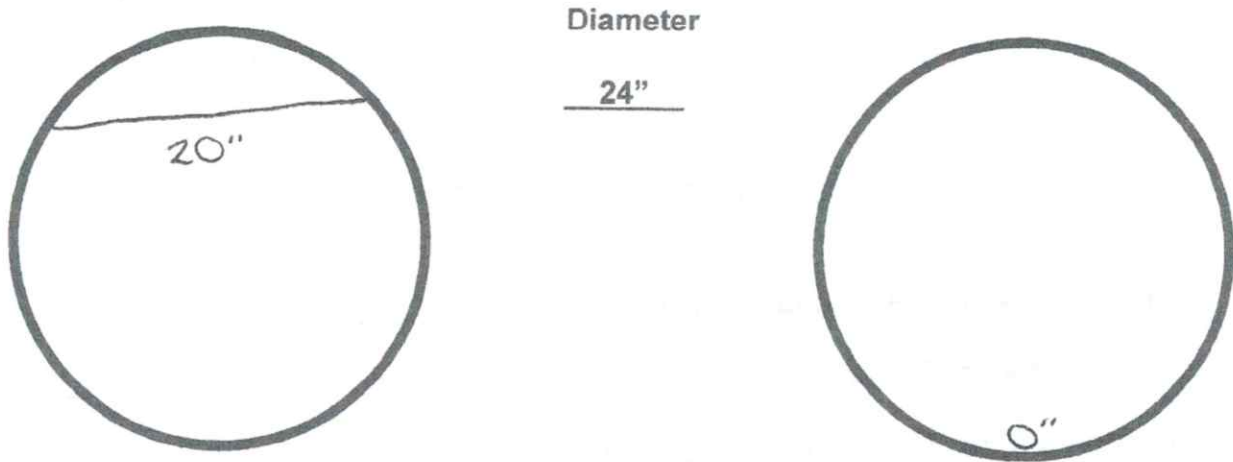
General Condition of Pipe: Diver noted that the pipe has 20" of sediment at the outfall in Lake 30. Also noted 1" of sediment from Lake 21 to CB 2.

**Lake 30 to Lake 21
Basin 3**

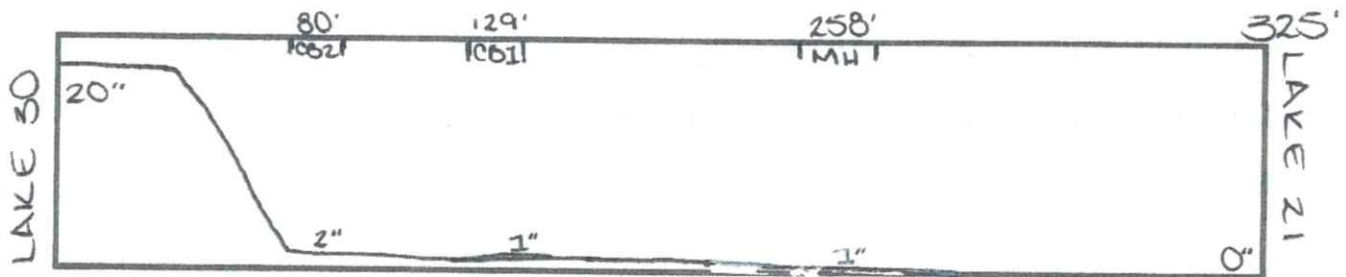
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: Diver noted that the pipe is CMP from Lake 30 to CB1 then turns
into plastic out to Lake 21.

Diver: Dakota **Tender:** Jacob **Supervisor:** _____

Name of Customer Representative on Site: _____

Phone: (954) 975-0098

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**Lake 17 to Estuary
River Club**

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 7, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 17 to CS8 to Esterian

Type of Pipe: CMP Diameter: 42" Length: 120'

Depth from surface to top of pipe: 2'

Describe access to the pipe: Outfall in Lake 17

End of pipe inspection made from (N.S.E.W): East to West

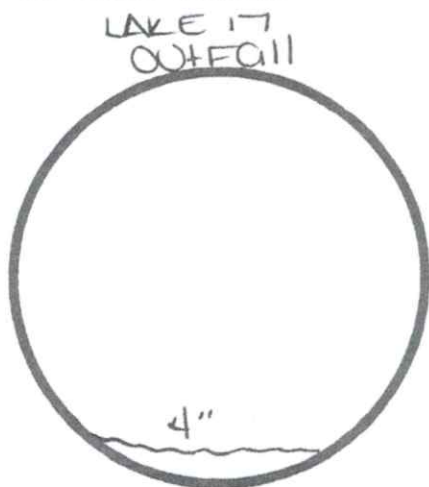
General Condition of Pipe: Dive team noted 4" to 5" of sediment throughout the
length of the pipe. Dive team also noted excessive hard growth throughout the
pipe that becomes substantial in the last 50' of the pipe. Other than the hard
growth the overall condition of the pipe is good.

**Lake 17 to Estuary
River Club**

2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:

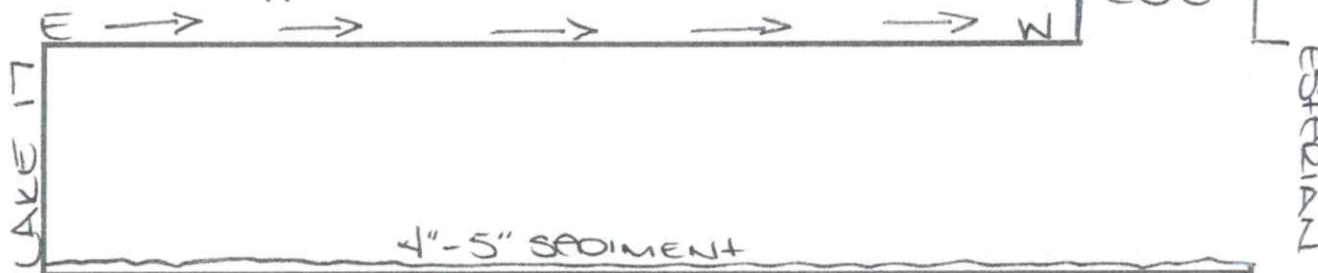


Diameter

42"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Tyler

Tender: William

Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 7, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 2 to Lake 16

Type of Pipe: CMP Diameter: 36" Length: 120'

Depth from surface to top of pipe: 24"

Describe access to the pipe: South East corner of Lake 2

End of pipe inspection made from (N.S.E.W): East to West

General Condition of Pipe: Dive team noted that the sediment is 8" at the pipe entrance and rises to 1' at the 20' mark. Pipe has very little water flow due to sediment increase at 50". Diver unable to continue past the 50' mark.

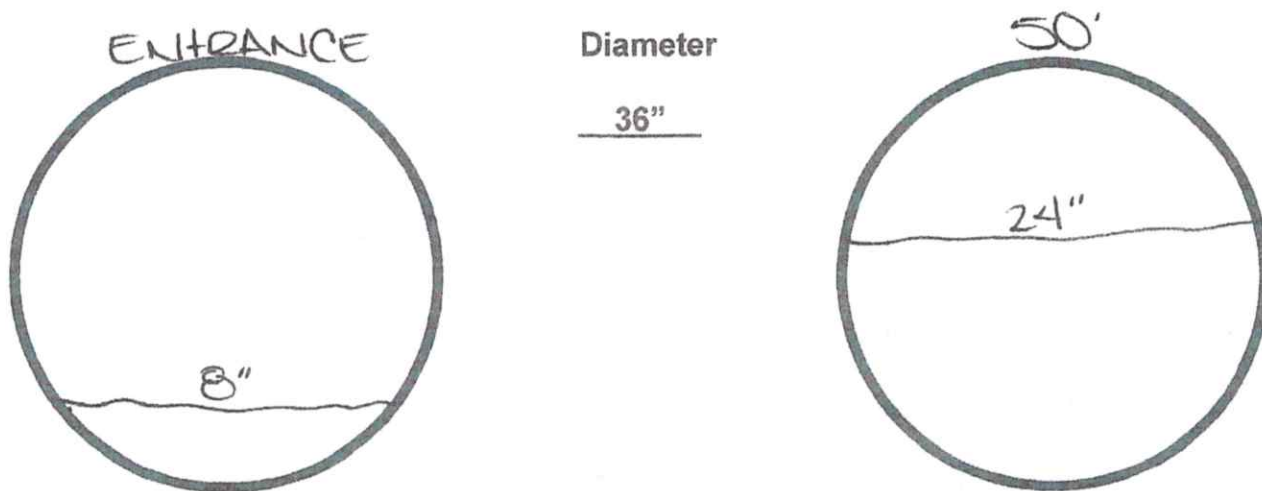
No
Video

Lake 16 to Lake 2
River Club

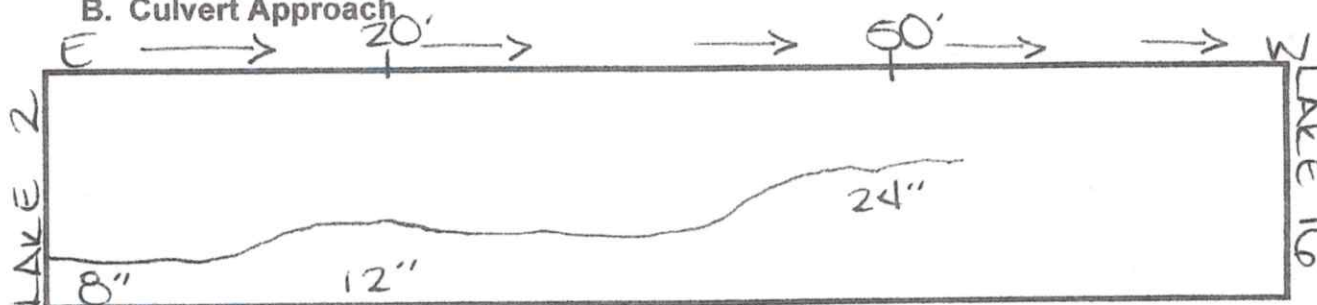
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: Inspection ended at 50' due to sediment levels.

Diver: Tyler Tender: William Supervisor: Chris

Name of Customer Representative on Site: David

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**Lake 3 to Lake 1
River Club**

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 9, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 3 to Lake 1

Type of Pipe: CMP Diameter: 24" Length: 225'

Depth from surface to top of pipe: 3'

Describe access to the pipe: Outfall in Lake 1

End of pipe inspection made from (N.S.E.W): West to East

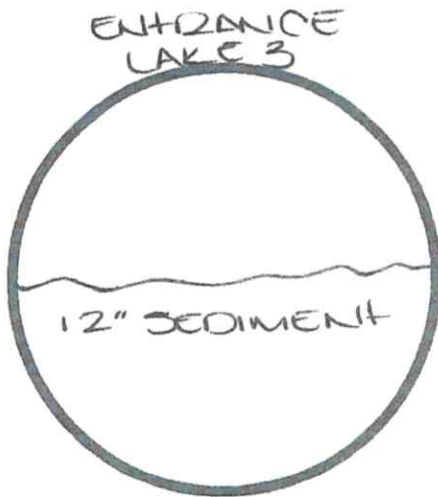
General Condition of Pipe: Dive team noted 12" of sediment.

Lake 3 to Lake 1
River Club

2 of 2

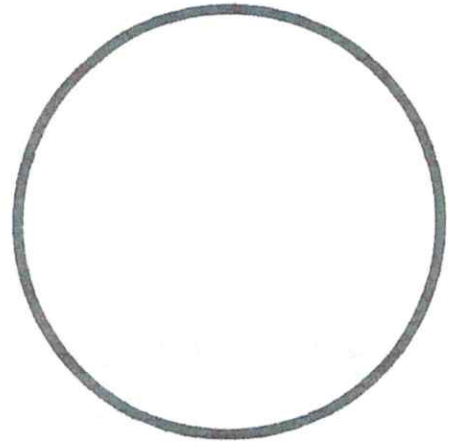
Illustrate Condition & Contents of Pipe

A. Cross Section:

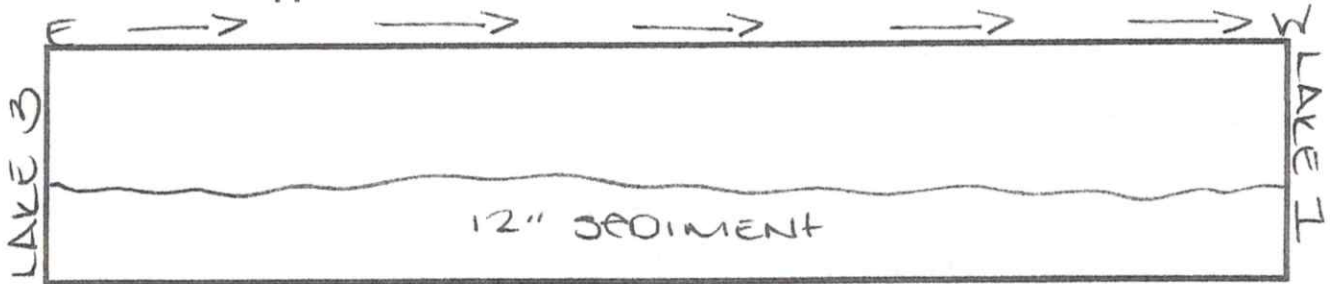


Diameter

24"



B. Culvert Approach



C. Culvert Profile: Round

Comments: Diver unable to inspect pipe due to sediment level.

Diver: Tyler Tender: William Supervisor: Chris

Name of Customer Representative on Site: David

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**Lake 13 to Lake 14
Basin 3**

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 8, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 13 to Lake 14

Type of Pipe: CMP Diameter: 24" Length: 100'

Depth from surface to top of pipe: 18"

Describe access to the pipe: In Lake 13

End of pipe inspection made from (N.S.E.W): West to East

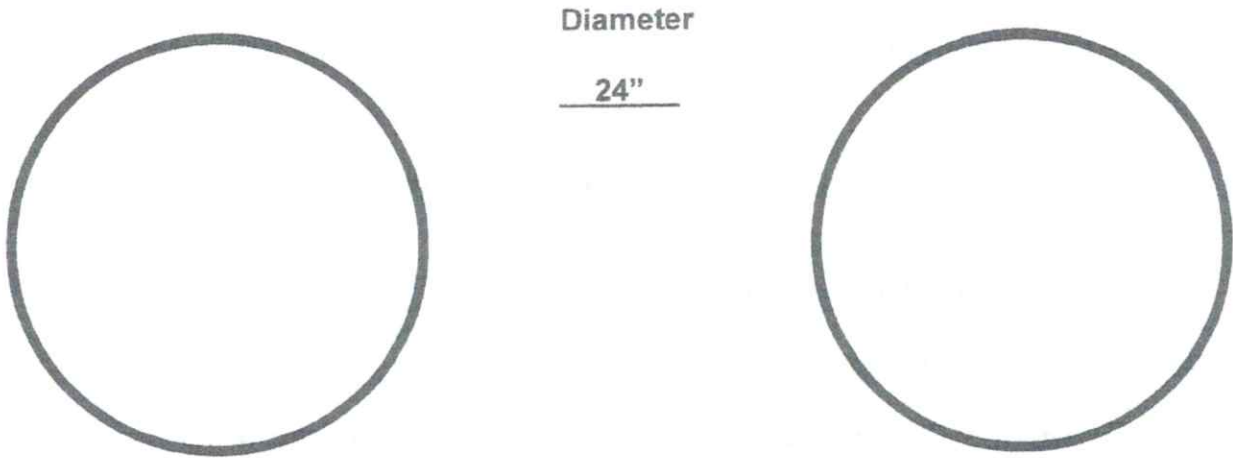
General Condition of Pipe: Dive team noted a steady stream of water coming out of the outfall.

**Lake 13 to Lake 14
Basin 3**

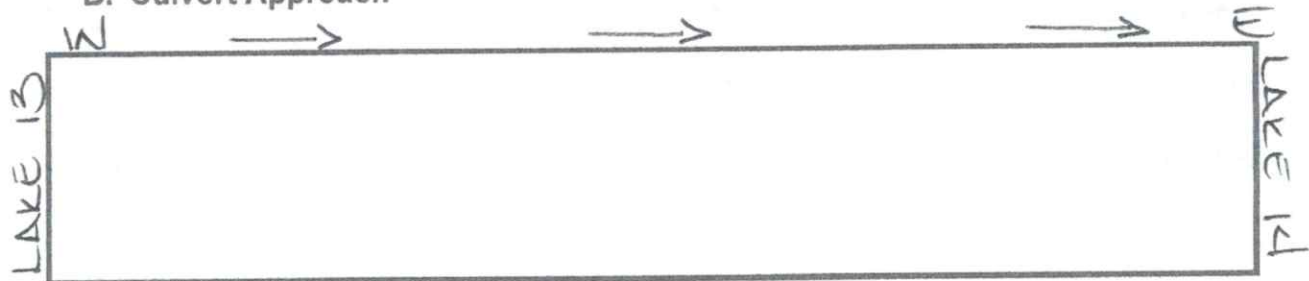
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: Dive team was unable to penetrate the pipe due to the size.

Diver: William **Tender:** Tyler **Supervisor:** Chris

Name of Customer Representative on Site: David

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**Lake 15 to Lake 13
Basin 3**

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 8, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 15 to Lake 13

Type of Pipe: CMP Diameter: 24" Length: 100'

Depth from surface to top of pipe: 15"

Describe access to the pipe: In Lake 15 heading East to Lake 13

End of pipe inspection made from (N.S.E.W): West to East

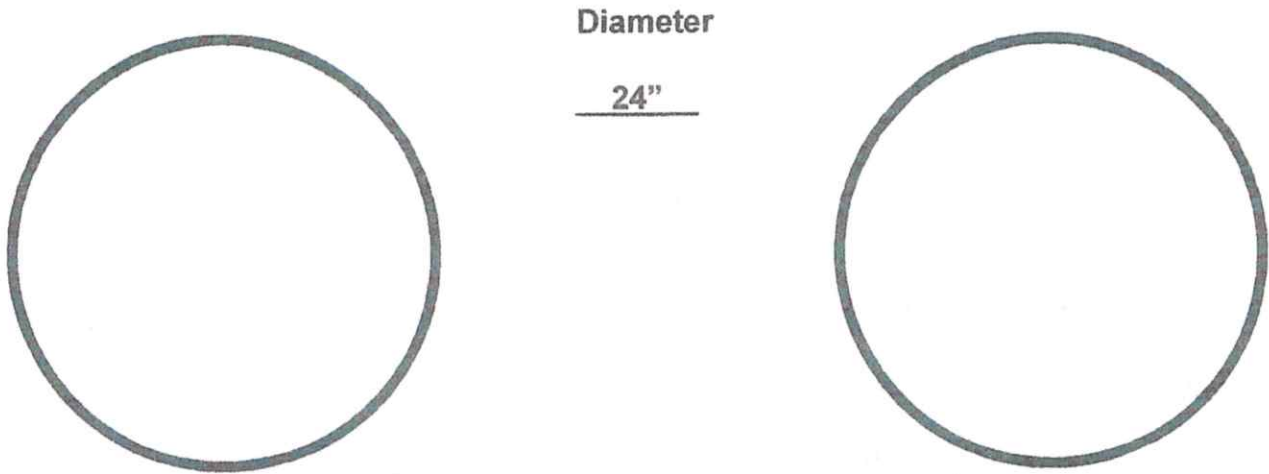
General Condition of Pipe: Dive team noted a steady stream of water coming out of the outfall.

**Lake 15 to Lake 13
Basin 3**

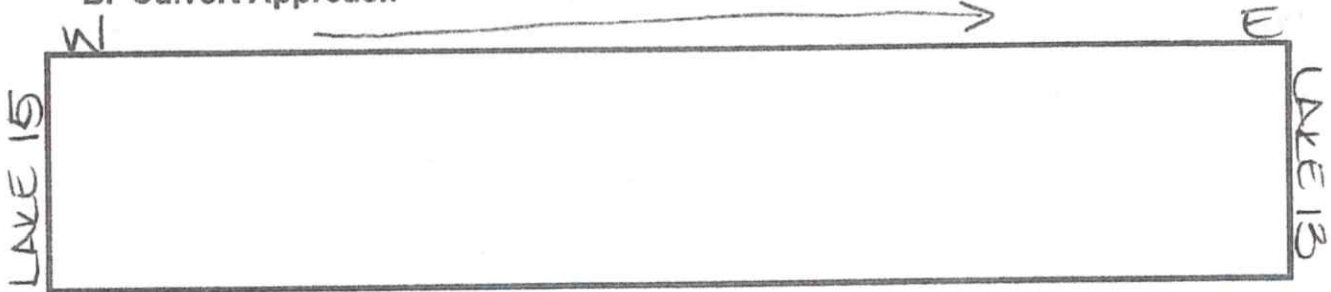
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: Dive team was unable to penetrate the pipe due to the size.

Diver: William **Tender:** Tyler **Supervisor:** Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 9, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 21 to Lake 20

Type of Pipe: CMP Diameter: 24" Length: 100'

Depth from surface to top of pipe: 18"

Describe access to the pipe: Lake 20 Outfall

End of pipe inspection made from (N.S.E.W): North

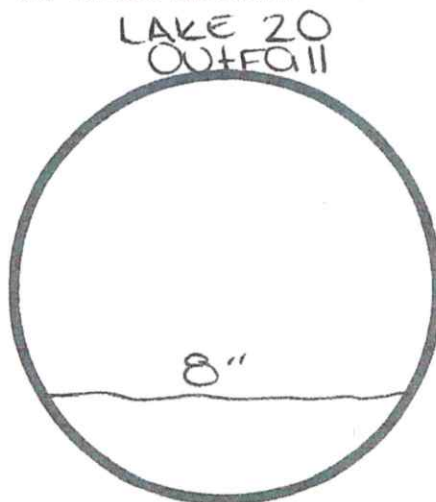
General Condition of Pipe: Dive team noted 8" of sediment at the entrance of the pipe. Also noted a strong water flow at the outfall.

Lake 20 to Lake 21
Basin 3

2 of 2

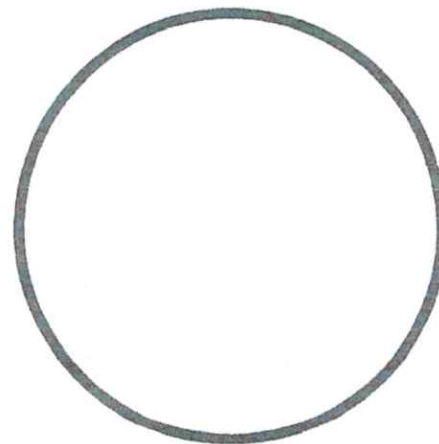
Illustrate Condition & Contents of Pipe

A. Cross Section:



Diameter

24"



B. Culvert Approach



C. Culvert Profile: Round

Comments: Dive team unable to penetrate the pipe due to size and sediment.

Diver: Tyler Tender: William Supervisor: Chris

Name of Customer Representative on Site: David

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 9, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Lake 28 to Lake 10

Type of Pipe: CMP Diameter: 36" Length: 350'

Depth from surface to top of pipe: 3'

Describe access to the pipe: Catch Basin between Lake 28 and Lake 10

End of pipe inspection made from (N.S.E.W): West to East

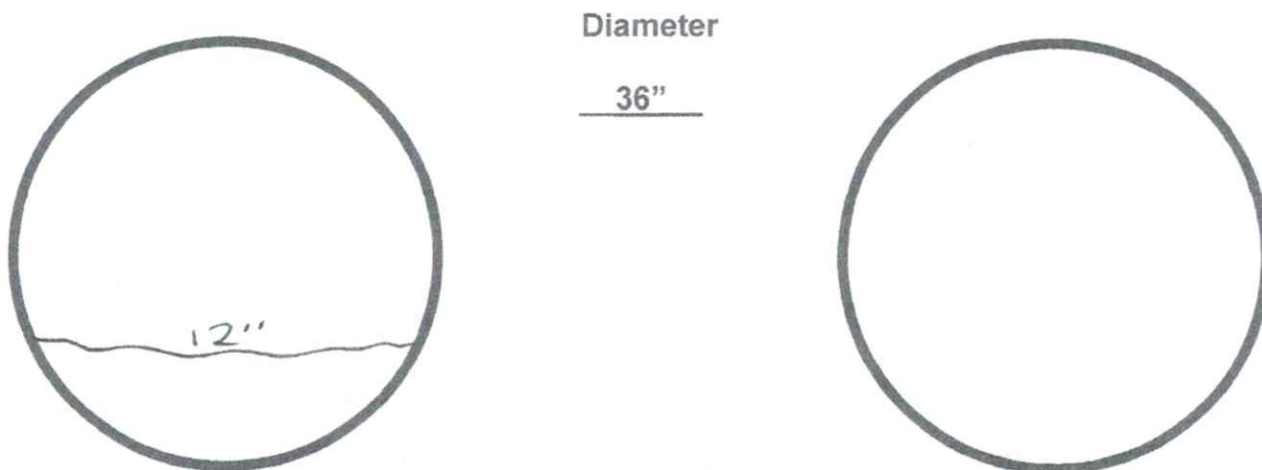
General Condition of Pipe: Dive team noted 12" of sediment throughout the
length of the pipe. Overall condition of the pipe is good. No damage or
obstructions with good water flow.

Lake 28 to Lake 10
Basin 1

2 of 2

Illustrate Condition & Contents of Pipe

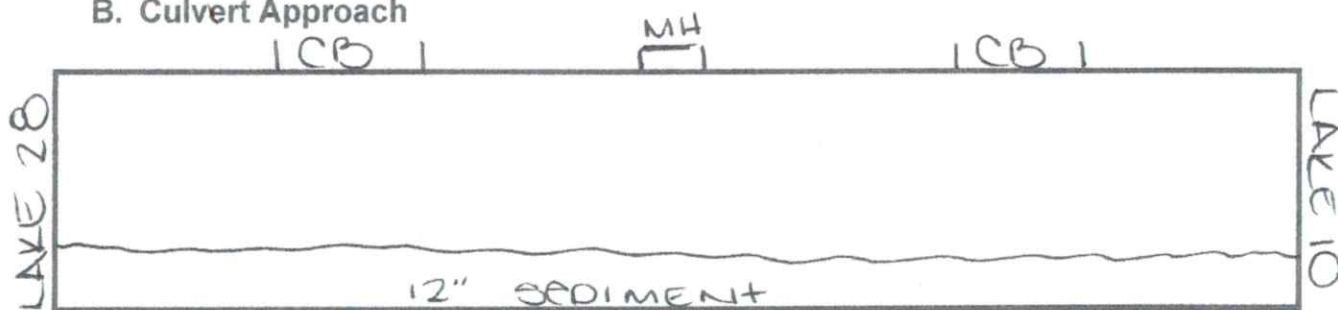
A. Cross Section:



Diameter

36"

B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Tyler Tender: William Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 9, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Man Hole in the center of the
street between Lake 13 and Lake 20

Type of Pipe: CMP Diameter: 36" Length: 200'

Depth from surface to top of pipe: 5'

Describe access to the pipe: Manhole between Lake 20 and Lake 13

End of pipe inspection made from (N.S.E.W): East to West

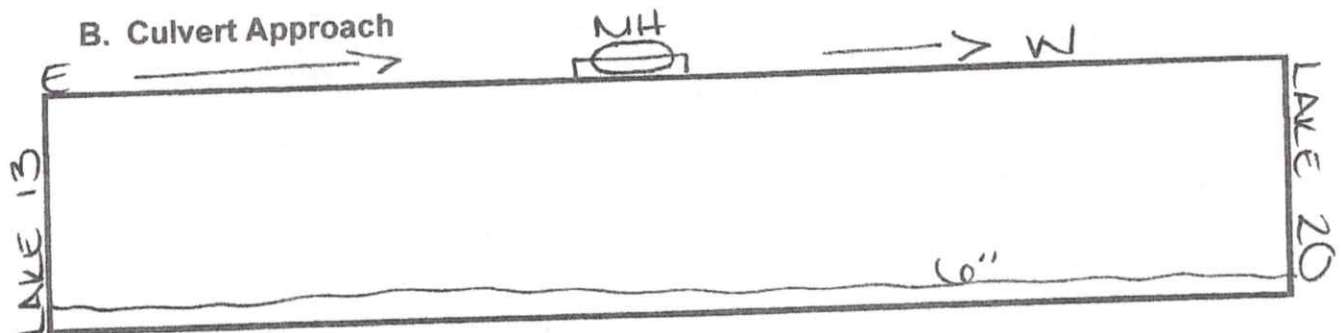
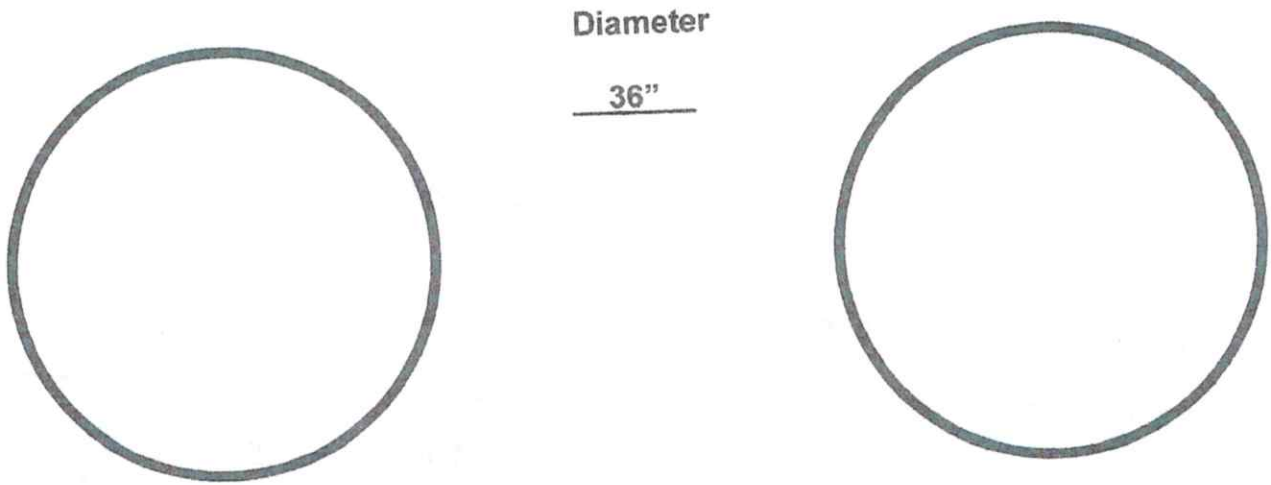
General Condition of Pipe: Dive team noted 4" to 6" of sediment throughout the
length of the pipe. Overall condition of the pipe is good with no damage or
obstructions.

Lake 13 to Lake 20
Basin 3

2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



C. Culvert Profile: Round

Comments: _____

Diver: Tyler

Tender: William

Supervisor: Chris

Name of Customer Representative on Site: David

Phone: (954) 975-0098

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**Double Culvert #4
Estuary**

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CULVERT PIPE INSPECTION FORM

Date of Inspection: August 7, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbor & Oak Harbor – Double #4

Type of Pipe: CMP Diameter: 72" Length: 150'

Depth from surface to top of pipe: Pipe is exposed

Describe access to the pipe: Pipe is out of the water

End of pipe inspection made from (N.S.E.W): East to West

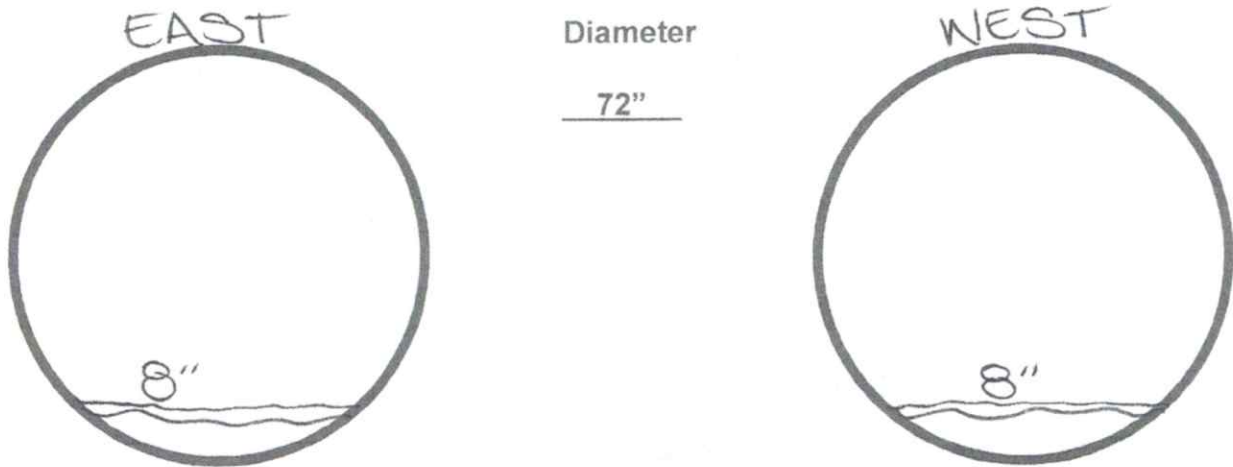
General Condition of Pipe: Dive team noted that the Pipe has only 8" of water in both the east and west pipes with 8" of sediment at the entrance. Both pipes are in overall good condition with no obstructions.

**Double Culvert #4
Estuary**

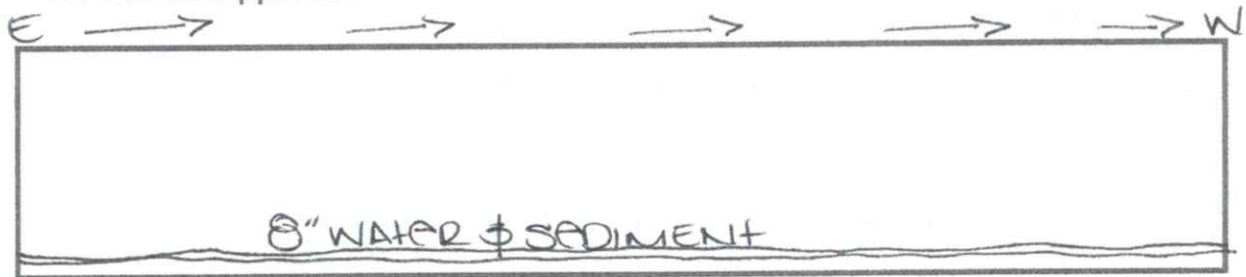
2 of 2

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: No video due to the pipe being dry.

Diver: William **Tender:** Tyler **Supervisor:** Chris

Name of Customer Representative on Site: David

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Lake 16E to Lake 1
Basin 5

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CULVERT PIPE INSPECTION FORM

Date of Inspection: December 12, 2019

Customer Name: Shenandoah

Location of Pipe: Grand Harbour golf course lake 16 to Lake 1

Type of Pipe: CMP Diameter: 30" Length: 210'

Depth from surface to top of pipe: 5"

Describe access to the pipe: 10' From the shoreline.

End of pipe inspection made from (N.S.E.W): North to South

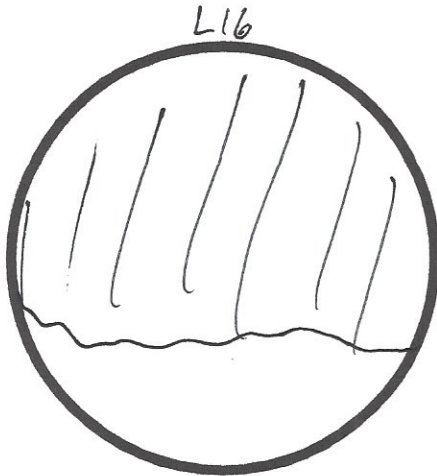
General Condition of Pipe: South side of pipe in Lake 16 is crushed and diver is unable to enter. Crushed area of pipe is 4ft with the top crushed downward. The pipe feels loose and is able to be moved by hand.

Lake 16E to Lake 1
Basin 5

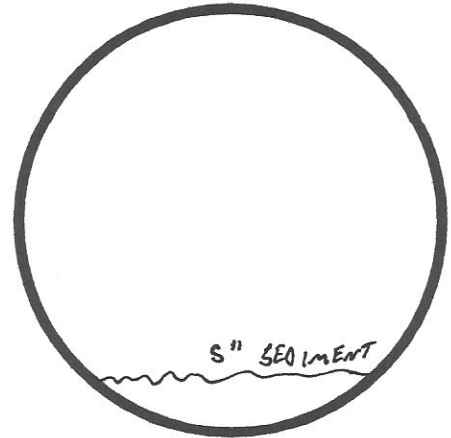
2 of 2

Illustrate Condition & Contents of Pipe

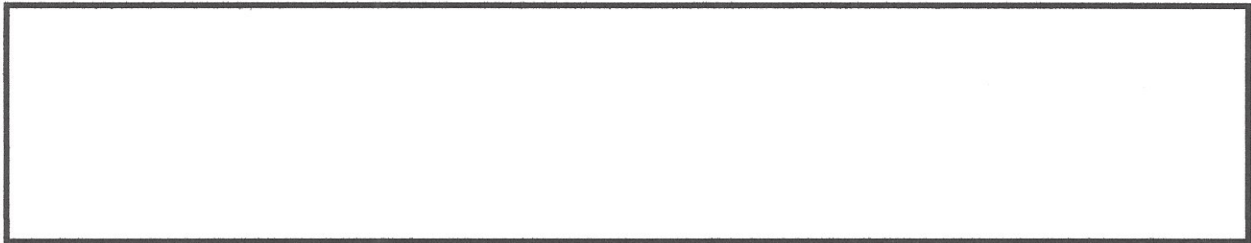
A. Cross Section:



Diameter
30"



B. Culvert Approach



C. Culvert Profile: Round

Comments: Inspection of Pipe called off due to diameter of pipe, and
crushed outfall the dive could not be performed safely.

Diver: Austin

Tender: Shane

Supervisor: Shane

Name of Customer Representative on Site: Dave Giles

Phone: (954) 975-0098

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Damaged E L16-L1 pipe to be inspected



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CULVERT PIPE INSPECTION FORM

Date of Inspection: December 12, 2019

Customer Name: Shenandoah

Location of Pipe: Double pipes #6 in the Estuary

Type of Pipe: CMP Diameter: 48" Length: 85'

Depth from surface to top of pipe: South pipe is 8" above waterline, and the North pipe is 10" above the waterline

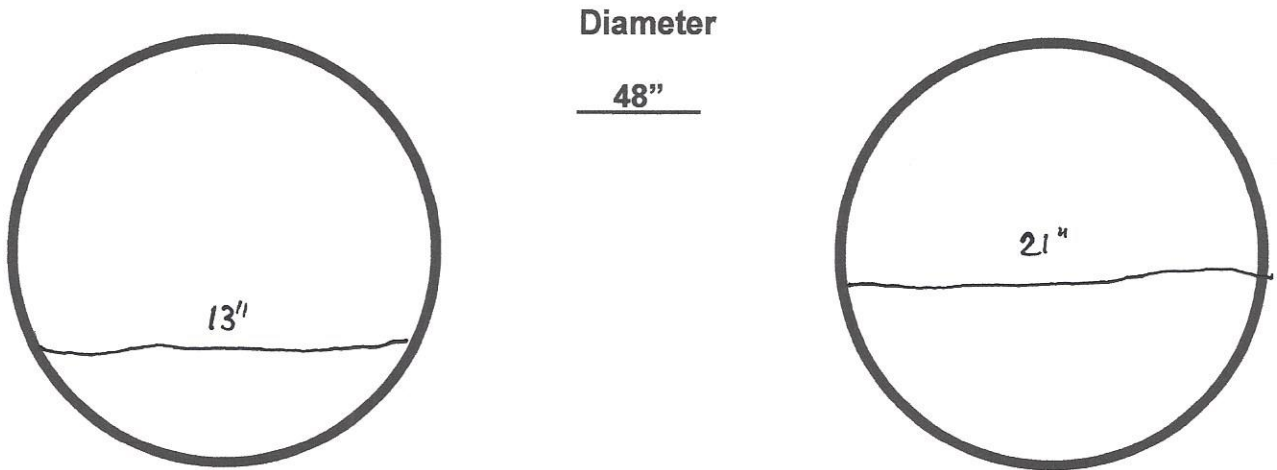
Describe access to the pipe: Pipe is on bottom of lake and 6' from the Shore

End of pipe inspection made from (N.S.E.W): East to West

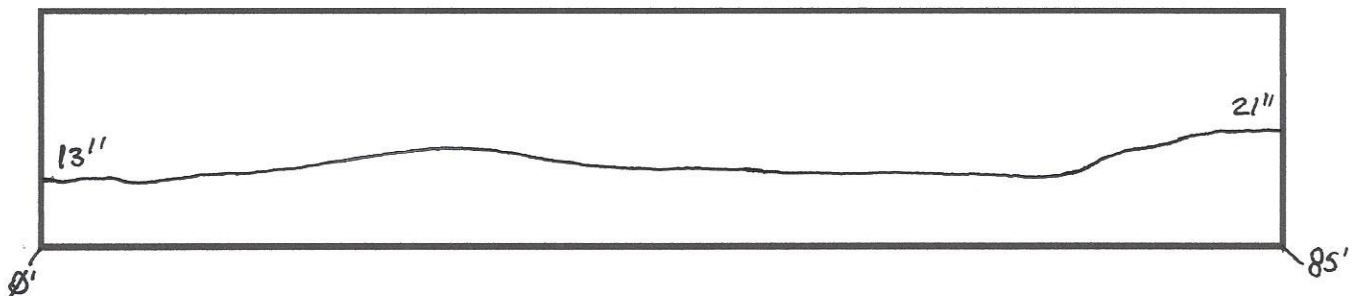
General Condition of Pipe: Pipes are in Good Condition with no major deficiencies. The South pipe is CMP with a diameter of 48" running from East to West and has a length of 85'. The sediment level inside the south pipe is 11" at running from East to West and has a length of 85'. The sediment level at the entrance to the North pipe is 13" and 21" at the exit.

Illustrate Condition & Contents of Pipe

A. Cross Section:



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Austin Tender: Shane Supervisor: Shane

Name of Customer Representative on Site: Dave Giles

Double Culvert #7 Estuary

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CULVERT PIPE INSPECTION FORM

Date of Inspection: December 12, 2019

Customer Name: Shenandoah

Location of Pipe: Double pipes #7 in the Estuary

Type of Pipe: CMP Diameter: 52" Length: 90'

Depth from surface to top of pipe: 8"

Describe access to the pipe: Pipe is on the bottom of the lake 3' from the shore

End of pipe inspection made from (N.S.E.W): East to West

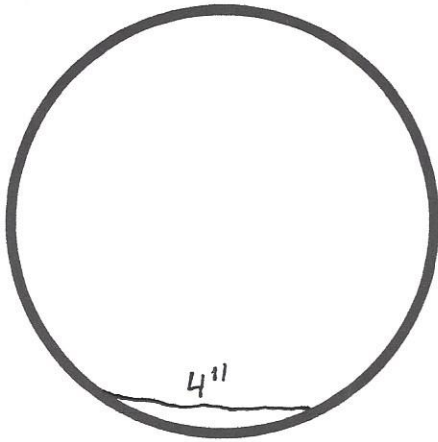
General Condition of Pipe: Pipes were found to be in good condition with no major deficiencies. South pipe is CMP, 52" in diameter and 90' in length. South pipe has minimal marine growth and has a sediment level of 3" consistent throughout the pipe, no deficiencies were noted. North pipe is CMP with a diameter of 52" in diameter and 90' in length. North pipe has minimal marine growth and has a sediment level of 4" dropping to 0" at 10' in the pipe. Sediment level rise to 3" at the outfall of the pipe, no deficiencies were noted.

Double Culvert #7 Estuary

2 of 2

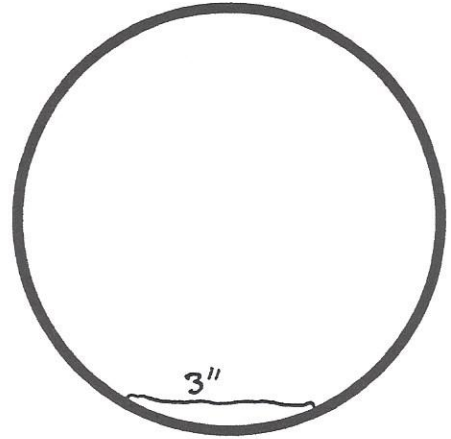
Illustrate Condition & Contents of Pipe

A. Cross Section:

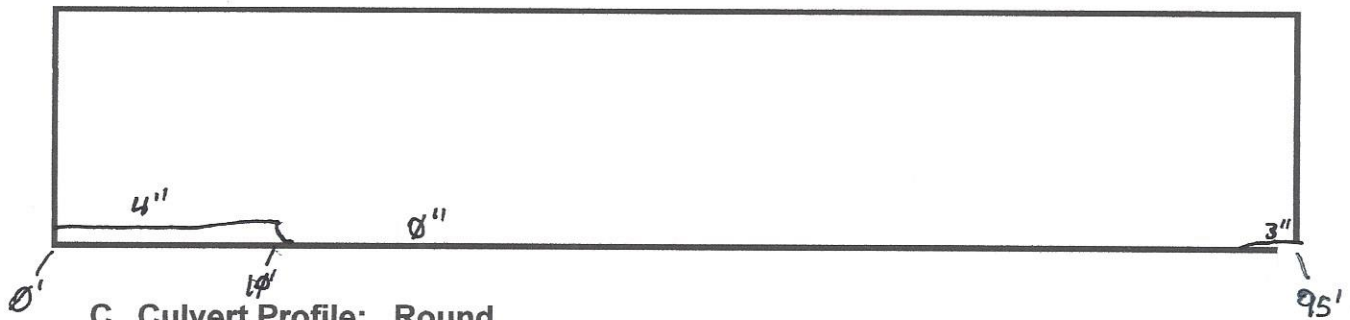


Diameter

52"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Austin Tender: Shane Supervisor: Shane

Name of Customer Representative on Site: Dave Giles

Phone: (954) 975-0098

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Single Culvert #8 Estuary

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CULVERT PIPE INSPECTION FORM

Date of Inspection: December 12, 2019

Customer Name: Shenandoah

Location of Pipe: Single pipe #8 in the Estuary

Type of Pipe: CMP Diameter: 72" Length: 95'

Depth from surface to top of pipe: Pipe is 3" above surface of the water

Describe access to the pipe: Pipe is flush with shore line and buried under dirt,
sticks and debris.

End of pipe inspection made from (N.S.E.W): North-West to South-East

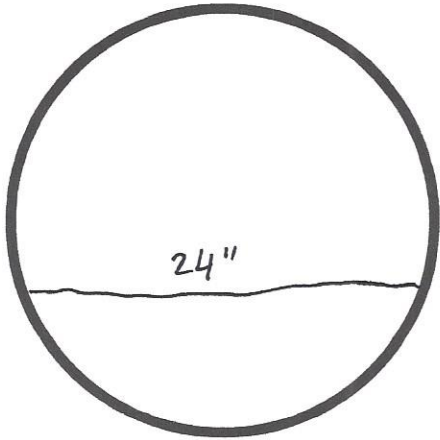
General Condition of Pipe: Entrance to Pipe has 24" of sediment. Diver was
unable to enter the pipe due to mangroves blocking the entrance.

Single Culvert #8 Estuary

2 of 2

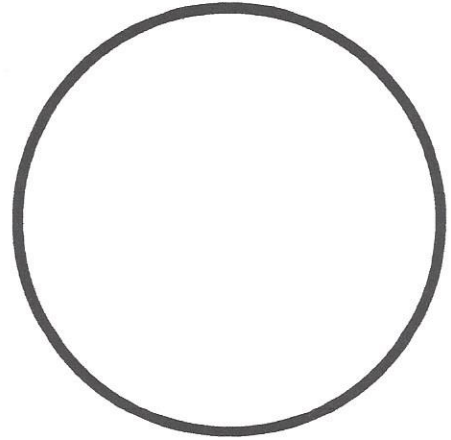
Illustrate Condition & Contents of Pipe

A. Cross Section:

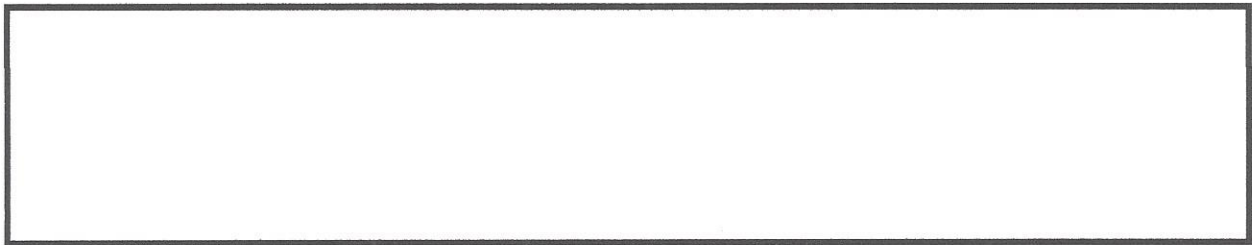


Diameter

72"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Austin Tender: Shane Supervisor: Shane

Name of Customer Representative on Site: Dave Giles

Phone: (954) 975-0098

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Double Culvert #9 Estuary

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CULVERT PIPE INSPECTION FORM

Date of Inspection: December 12, 2019

Customer Name: Shenandoah

Location of Pipe: Double pipes #9 in the estuary

Type of Pipe: CMP Diameter: 72" Length: 95'

Depth from surface to top of pipe: Pipe is 3" above surface of the water

Describe access to the pipe: Pipe is flush with shore line and buried under dirt,
sticks and debris.

End of pipe inspection made from (N.S.E.W): North to South

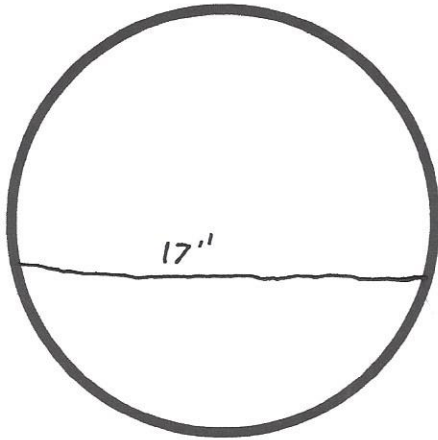
General Condition of Pipe: Location # was found to be a double bore pipe. The
west Pipe and East pipe were found to be very similar in that they both Have a
diameter of 72", a length of 95', a sediment level of 17", and are both CMP.

Double Culvert #9 Estuary

2 of 2

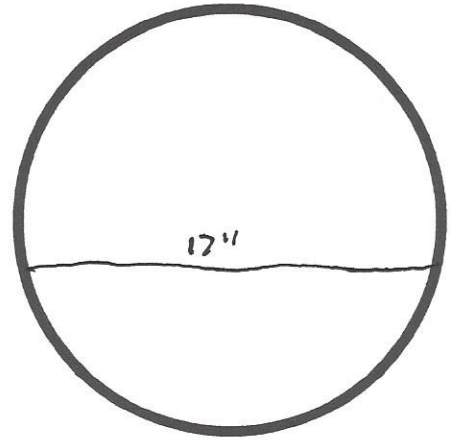
Illustrate Condition & Contents of Pipe

A. Cross Section:

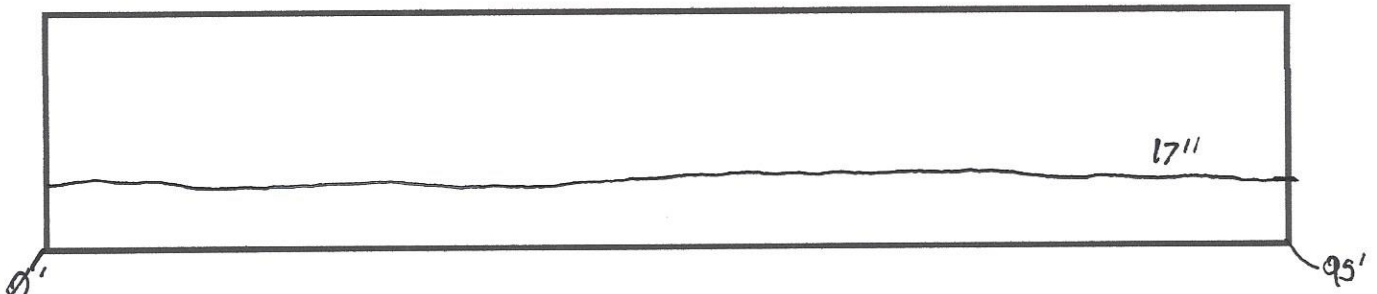


Diameter

72"



B. Culvert Approach



C. Culvert Profile: Round

Comments: _____

Diver: Austin Tender: Shane Supervisor: Shane

Name of Customer Representative on Site: Dave Giles

Phone: (954) 975-0098

Shenandoah Construction
1888 N. W. 22nd Street
Pompano Beach, Florida 33069
www.shenandoahconstruction.com

Fax: (954) 975-9718

SHENANDOAH CONSTRUCTION

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Phone 954 975-0098 • Fax 954 975-9718

NORTH OFFICE

Order # 15165

DAILY WORK REPORT

Date: 10/11/19

Name of Contractor: <u>Grand Harbor</u>	Job Name: <u>Grand Harbor</u>
Address:	Job Address:
State & Zip:	Job City: <u>Vero Beach</u>

Equipment/Material	Quantity	Unit Type	Unit Price	Total
Combo Video & Jet Vac Truck	1			
Jet Vac Truck				
Telespection Truck				
Support Truck				
Fuel Surcharge				
<u>Dive Crew</u>	<u>1</u>	<u>Day</u>	<u>4.750⁰⁰</u>	<u>4.750.00</u>
Disposal Fee				
Water Usage				

Note: 1) "One Way" Travel time is same hourly rate as truck.
2) Hourly rates will consist of a 3 hour min.

Amount Due 4.750.00

Start Time: 7:00 Am

Finish Time: 1:00 Pm

Foreman's Comments: _____

Equipment on Job	Personnel on Job
<u>Divers</u> <u>"CDS"</u>	

Cleaned from L5 to L17

X

Signature of Contractor's Representative.
Above work has been completed satisfactorily.

SHENANDOAH CONSTRUCTION

NORTH OFFICE

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Order # 15165

DAILY WORK REPORT

Date: 10/10/19

Name of Contractor: <u>Grand Harbor and Oak Harbor Transition</u>	Job Name: <u>Grand Harbor Storm Drainage</u>
Address:	Job Address: <u>L2 to L16</u>
State & Zip:	Job City: <u>Vero Beach</u>

Equipment/Material	Quantity	Unit Type	Unit Price	Total
Combo Video & Jet Vac Truck				
Jet Vac Truck				
Telespection Truck				
Support Truck				
Fuel Surcharge				
<u>Divers + Pump cleaned L2+L16</u> <u>discounted to 200</u>	<u>1</u>	<u>per day</u>	<u>\$4500</u>	<u>\$4500</u>
Disposal Fee				
Water Usage				

Note: 1) "One Way" Travel time is same hourly rate as truck.
2) Hourly rates will consist of a 3 hour min.

Amount Due

Start Time: 7:00 Am

Finish Time: 6:00 Pm

Foreman's Comments: _____

Equipment on Job	Personnel on Job
<u>6" Pump</u> <u>Divers</u>	<u>CDS - Divers</u>

L2 to L16
Cleaned 230' of 36" CMP
removed Dirt from around out fall pipe
for cutting of out fall pipe at L16

X

Signature of Contractor's Representative.
Above work has been completed satisfactorily.

SHENANDOAH

CONSTRUCTION

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NORTH OFFICE

Order # 15165

DAILY WORK REPORT

Date: 10-9-19

Name of Contractor: <u>Grand Harbor</u>	Job Name: <u>Grand Harbor</u>
Address:	Job Address:
State & Zip:	Job City: <u>Vero Beach</u>

Equipment/Material	Quantity	Unit Type	Unit Price	Total
Combo Video & Jet Vac Truck				
Jet Vac Truck —				
Telespection Truck				
Support Truck				
Fuel Surcharge				
<u>cleaned L30 to L21 + Located M/C</u>	<u>1</u>	<u>per day</u>	<u>\$2500</u>	<u>\$2500</u>
<u>cleaned L1 to L5</u>	<u>1</u>	<u>per day</u>	<u>\$5250</u>	<u>\$5250</u>
Disposal Fee				
Water Usage				

Note: 1) "One Way" Travel time is same hourly rate as truck.
2) Hourly rates will consist of a 3 hour min.

Amount Due

\$6500

Start Time: 7:00 Am

Finish Time: 5:30 pm

Foreman's Comments:

Cleaned out fall pipe at
L-5 Cleaned pipes between
(L-30 and ~~L-31~~ L-21 complete)

Equipment on Job	Personnel on Job
<u>Comm Dive</u> <u>Vac truck 290</u>	<u>Z. Gleason</u> <u>D. Giles</u> <u>E. Stancil</u> <u>Divers - CDS</u>

X

Signature of Contractor's Representative.
Above work has been completed satisfactorily.

SHENANDOAH CONSTRUCTION

NORTH OFFICE

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Order # 15165

DAILY WORK REPORT

Date: 10-8-19

Name of Contractor: <u>Grand Harbor</u>	Job Name: <u>Grand Harbor</u>
Address:	Job Address:
State & Zip:	Job City: <u>Vero Beach</u>

Equipment/Material	Quantity	Unit Type	Unit Price	Total
Combo Video & Jet Vac Truck				
Jet Vac Truck <u>X</u>				
Telespection Truck				
Support Truck				
Fuel Surcharge				
<u>Clean L 20 to L 21 100 ft</u>	<u>0.5</u>	<u>Per day</u>	<u>4500</u>	<u>\$2250</u>
<u>Clean L 30 to L 21 on L 30 side</u>	<u>0.5</u>	<u>Per day</u>	<u>2500</u>	<u>\$1250</u>
<u>Clean L 18 to L 19 + sump</u>	<u>0.5</u>	<u>Per day</u>	<u>52</u>	<u>\$2625</u>
Disposal Fee				
Water Usage				

Note: 1) "One Way" Travel time is same hourly rate as truck.
2) Hourly rates will consist of a 3 hour min.

Amount Due

\$6125

Start Time: 7:30 AM

Finish Time: 5:00 PM

Foreman's Comments: Cleaned 100 ft
of 24" Cmp at L 20 - L 21
Cleaned 124 ft of RCP
at L 30, Clean + Sumped L 18 to L 19

Equipment on Job	Personnel on Job
<u>Vac truck 290</u> <u>Pick up</u> <u>Comm. Dives irv. + Pump</u>	<u>DAVID</u> <u>Zachary,</u> <u>CAS Dives crew</u> <u>Chris + Team</u>

X

Signature of Contractor's Representative.
Above work has been completed satisfactorily.

SHENANDOAH

CONSTRUCTION

NORTH OFFICE

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Order # 15165

DAILY WORK REPORT

Date: 10-7-19

Name of Contractor: <u>Grand Harbor</u>	Job Name: <u>Grand Harbor</u>
Address:	Job Address:
State & Zip:	Job City: <u>Vero Beach</u>

Equipment/Material	Quantity	Unit Type	Unit Price	Total
Combo Video & Jet Vac Truck <u>Cleaned L1 to L3 vac trucks</u>	<u>1</u>	<u>Per Day</u>	<u>\$5250</u>	<u>5250</u>
Jet Vac Truck				
Telespection Truck				
Support Truck				
Fuel Surcharge				
Disposal Fee				
Water Usage				

Note: 1) "One Way" Travel time is same hourly rate as truck.
2) Hourly rates will consist of a 3 hour min.

Amount Due

\$5250

Start Time: 7:00

Finish Time: 5:00

Foreman's Comments:

Cleaned 24" pipe between Lake 1-3
Cleaned 225 ft
Worked with Divers Lake 18-19

Equipment on Job	Personnel on Job
<u>Pick up truck</u> <u>Vac truck 290</u> <u>Com. Dive services X3</u> <u>2 inch pump</u>	<u>Z. Gleason</u> <u>D. Giles</u> <u>E. Stenall</u>

X

Signature of Contractor's Representative.
Above work has been completed satisfactorily.

SHENANDOAH

CONSTRUCTION

NORTH OFFICE

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Order # 15165

DAILY WORK REPORT

H

Date: 10/4/2019

Name of Contractor: <u>Grand Harbor & Braddock Farms</u>	Job Name: <u>Drainage Clean + Video Recommendation</u>
Address: <u>VERO</u>	Job Address: <u>L-9 to L12, L14, L22 to L23</u>
State & Zip: <u>VERO</u>	Job City: <u>VERO</u>

Equipment/Material	Quantity	Unit Type	Unit Price	Total
Combo Video & Jet Vac Truck				
Jet Vac Truck				
Telespection Truck				
Support Truck				
Fuel Surcharge				
Cleaned L9 to L12	0.25	Per Day	\$5250.00	\$1312.50
Cleaned L14 to L23 outfall	1	Per Day	\$2500.00	\$2500.00
L22 to L23	1	Per Day	\$3800.00	\$3800.00
L10 to L11 CB3 Clean + Pump	1	Per Day	\$5250.00	\$5250.00
Disposal Fee				
Water Usage				

Note: 1) "One Way" Travel time is same hourly rate as truck.
2) Hourly rates will consist of a 3 hour min.

Amount Due \$12,862.50

Start Time: 07:00 A

Finish Time: 3:30 P

Foreman's Comments: VAC + DIVE CREW

Completed cleaning
ON L9 to L12 (Note: Make Dive Trailer + Etc)
ALSO L14 to L23 36" pipes, VAC + TV CREW
work on pump down investigation L22 to L23
Finding pipe size larger than reported
Diver will dive pipes + video them.
Cleaned L10 to L11 CB3
Sumped out with VAC
+ Divers

Equipment on Job	Personnel on Job
<u>Vac 290</u> <u>PU 371</u>	<u>DAVE</u> <u>ZACHARY</u> <u>Donnie</u> <u>ELTON</u> <u>TERRELL</u> <u>MARCO</u> <u>CDSDivers</u>

X

Signature of Contractor's Representative.
Above work has been completed satisfactorily.

SHENANDOAH

CONSTRUCTION

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NORTH OFFICE

Order # 15165

DAILY WORK REPORT

Date: 10-4-19

Name of Contractor: <u>Grand Harbor & Oak Harbor</u>	Job Name: <u>Clean & Video Recommendations for</u>
Address: <u>TRANSITION LLC</u>	Job Address: <u>St. Harbor Dr LAKE connections</u>
State & Zip:	Job City: <u>VERO beach</u>

Equipment/Material	Quantity	Unit Type	Unit Price	Total
Combo Video & Jet Vac Truck				
Jet Vac Truck				
Telespection Truck				
Support Truck				
Fuel Surcharge				
NOTES				
Disposal Fee				
Water Usage				

Note: 1) "One Way" Travel time is same hourly rate as truck.
2) Hourly rates will consist of a 3 hour min.

Amount Due

Start Time: 7:00 AM

Finish Time: 3:30 AM

Foreman's Comments: _____

Equipment on Job	Personnel on Job
TV 359 1-48 Airbag	R. LOPEZ
VAC 317 2-36" Airbag	MI. NELSON
P/U 293 2-24" Airbag	D. MORGAN
6" pump & 100" Discharge	T. STACILL

ATTEMPTED TO pump DOWN SYSTEM
BETWEEN Lake 22 + to LAKE 23

PIPE is 48 NOT 36 UNABLE TO pump down

X

Signature of Contractor's Representative.
Above work has been completed satisfactorily.

SHENANDOAH CONSTRUCTION

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NORTH OFFICE

Order # 15165

DAILY WORK REPORT

Date: 10-4-19

Name of Contractor: <u>Grand Harbor</u>	Job Name: <u>Grand Harbor</u>
Address:	Job Address:
State & Zip:	Job City: <u>Vero Beach</u>

Equipment/Material	Quantity	Unit Type	Unit Price	Total
Combo Video & Jet Vac Truck				
Jet Vac Truck ✓				
Telespection Truck				
Support Truck				
Fuel Surcharge				
Notes				
Disposal Fee				
Water Usage				

Note: 1) "One Way" Travel time is same hourly rate as truck.
2) Hourly rates will consist of a 3 hour min.

Amount Due

Start Time: _____

Finish Time: _____

Foreman's Comments: Cleaned ~~122~~ 122ft

of Cmp

Cleaned from L9 to L12

Cleaned out fall at lake 14

Cleaned out fall at lake 11 Sump

Divers Noted Hole in pipe from 12 to 9

Equipment on Job	Personnel on Job
Pick up truck and flex	Z. Gleason
Comm. Diver Service X2	D. Giles
Vac truck 290	E. Stancill
	E. Stancill

X

Signature of Contractor's Representative.
Above work has been completed satisfactorily.

SHENANDOAH

CONSTRUCTION

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NORTH OFFICE

Order # 15165

DAILY WORK REPORT

Date: 10-3-19

Name of Contractor: <u>Ground Harbor & Oak Harbor Transfer</u>	Job Name: <u>Ground Harbor Draining Lake Connecticut</u>
Address:	Job Address: <u>L-10 to L-28</u>
State & Zip:	Job City: <u>Vero Beach</u>

Equipment/Material	Quantity	Unit Type	Unit Price	Total
Combo Video & Jet Vac Truck				
Jet Vac Truck <u>L-10 to L-28 cleaning</u>	<u>1</u>	<u>Per Day</u>	<u>\$2500</u>	<u>2500</u>
Telespection Truck				
Support Truck	<u>x</u>			
Fuel Surcharge				
Disposal Fee				
Water Usage				

Note: 1) "One Way" Travel time is same hourly rate as truck.
2) Hourly rates will consist of a 3 hour min.

Amount Due

\$2500

Start Time: 7:00 Am

Finish Time: 5:00 Pm

Foreman's Comments:

Installed Air Bags 36"
Cleaned Catch Basin and
pipe connecting Lakes cleaned out full Lake 10 to Lake 28

Equipment on Job	Personnel on Job
<u>#317</u> <u>#298</u>	<u>D. Morgan</u> <u>T. Stancil</u>

X

Signature of Contractor's Representative.
Above work has been completed satisfactorily.

SHENANDOAH

CONSTRUCTION

NORTH OFFICE

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Order # 15165

DAILY WORK REPORT

Date: 10/03/2019

Name of Contractor: <u>Coral Harbor + Grand Oaks Transition</u>	Job Name: <u>Final Clean + Video Recommendation</u>
Address: <u>Transition</u>	Job Address: <u>L-9 to L-12</u>
State & Zip: <u>vero</u>	Job City: <u>vero Beach</u>

Equipment/Material	Quantity	Unit Type	Unit Price	Total
Combo Video & Jet Vac Truck				
Jet Vac Truck + Divers L-9 to L-12	0.75	per day	5250	3937.50
Telespection Truck				
Support Truck				
Fuel Surcharge				
Disposal Fee				
Water Usage				

Note: 1) "One Way" Travel time is same hourly rate as truck.
2) Hourly rates will consist of a 3 hour min.

Amount Due

\$3937.50

Start Time: 7:00

Finish Time: 5:00

Foreman's Comments: Cleaning 36" pipe

at L-9 to L-12

clean 80 LF Found pipe to Bay 120 LF Both
lakes. Have no room to deposit any more
sand from pipe at this time (need equipment
to extract sand from lake to continue).

Equipment on Job	Personnel on Job
<u>VACTRK 290</u>	<u>Sub</u>
<u>Dive Equipment</u>	<u>CDS Divers</u>
<u>Trailer</u>	<u>Dakota Zachary</u>
	<u>DAVE</u>
	<u>ELton</u>

X

Signature of Contractor's Representative.
Above work has been completed satisfactorily.

SHENANDOAH

CONSTRUCTION

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NORTH OFFICE

Order # 15165

DAILY WORK REPORT

Date: 10-2-19

Name of Contractor: <u>Grand Harbor & Oak Harbor</u>	Job Name: <u>Drainage Clean and Video</u>
Address:	Job Address:
State & Zip:	Job City:

Equipment/Material	Quantity	Unit Type	Unit Price	Total
Combo Video & Jet Vac Truck				
Jet Vac Truck	<u>1</u>	<u>Per Day</u>	<u>\$2500</u>	<u>\$2500</u>
Telespection Truck				
Support Truck	<u>1</u>			
Fuel Surcharge				
Disposal Fee				
Water Usage				

Note: 1) "One Way" Travel time is same hourly rate as truck.
2) Hourly rates will consist of a 3 hour min.

Amount Due

\$2500.00

Start Time: 7:00 AM

Finish Time: 4:30 PM

Foreman's Comments: _____

Equipment on Job	Personnel on Job
<u># 317</u> <u># 293</u>	<u>D. Morgan</u> <u>E. Stencil</u> <u>Z. Gleason</u>

Clean L28 To L10
Take connecting pipe 36" Clean Box To cut Fall and Installed
Air Bags

X

Signature of Contractor's Representative.
Above work has been completed satisfactorily.

Ponds and Connections Using SJRWMD

CMP Connection

RCP Connection

Reserve Lake Number

Osprey Lake Number

SJRWMD Lake Number

Control Structure

Double CMP Culvert

Flushing Channel

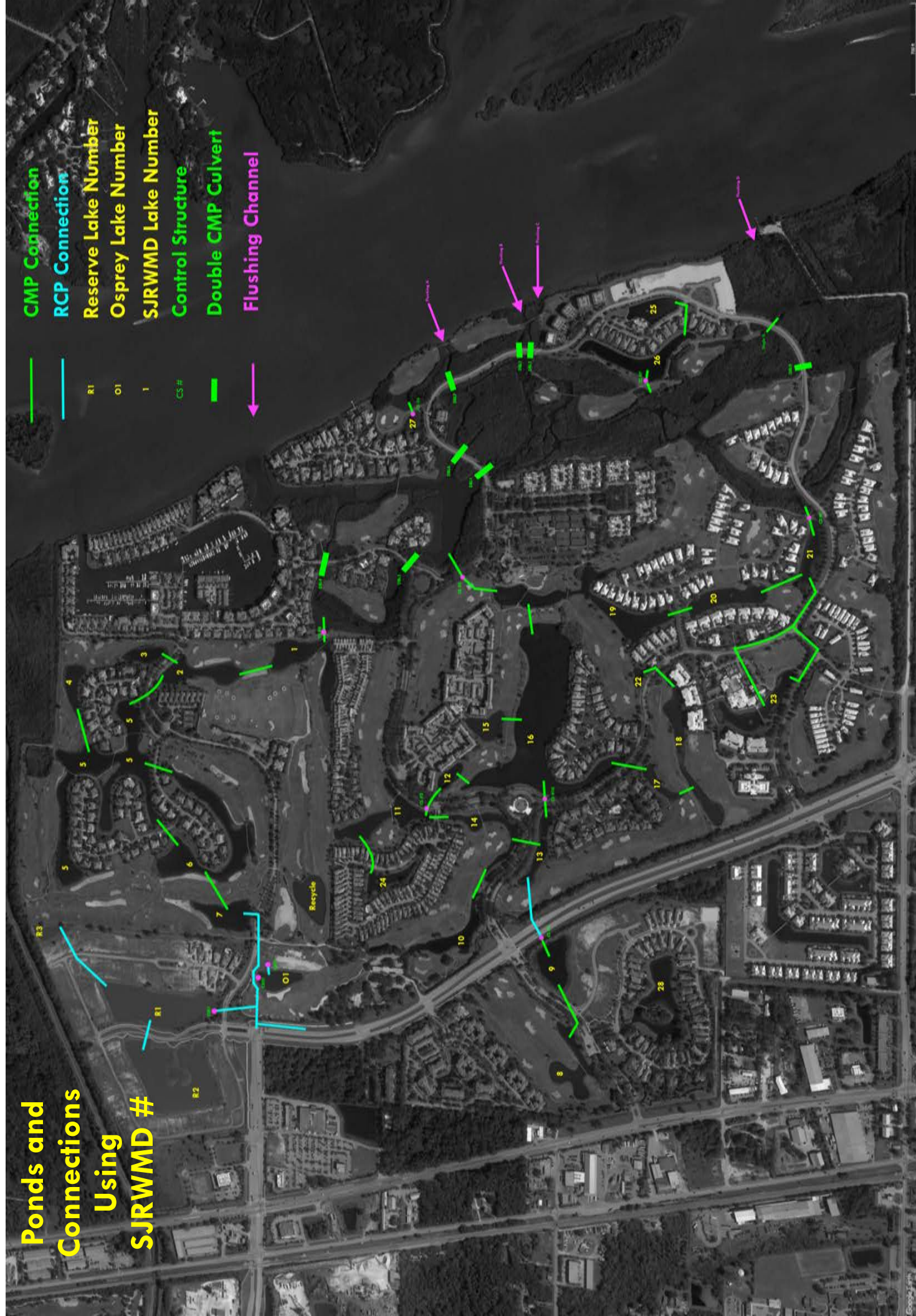
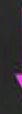


R1

O1

1

CS #



Length of Interconnecting Pipes

Sum of Length (FT)	
Row Labels	Total
CMP	6373
24	1101
30	210
32	50
36	2332
42	529
48	710
52	90
54	241
60	20
72	1090
RCP	2823
24	1169
42	886
54	433
18	335
CAP	65
18	65
Grand Total	9261

CMP Corrugated Metal Pipe
RCP Reinforced Concrete Pipe
CAP Plastic Pipe

There are some small sections of pipe that were not measured due to blockages

Sum of Length (FT)	
Row Labels	Total
18	400
RCP	335
CAP	65
24	2270
CMP	1101
RCP	1169
30	210
CMP	210
32	50
CMP	50
36	2332
CMP	2332
42	1415
CMP	529
RCP	886
48	710
CMP	710
52	90
CMP	90
54	674
CMP	241
RCP	433
60	20
CMP	20
72	1090
CMP	1090
Grand Total	9261

Basin	From Shen #	To Shen #	From SJ #	To SJ #	CBs	Type	Diameter	Length (FT)
5	17	5	1	2		CMP	36	
5	17	EST	1	EST		CMP	42	120
5	4	5	3	2		CMP	36	145
5	3	1	4	5		CMP	24	225
5	1	16	5	6		CMP	36	200
5	1	5	5	2		CMP	36	250
5	16	2	6	7		CMP	36	120
1	28	10	8	9		CMP	36	350
1 TO 2	10	CS1	9	CS1		CMP	60	20
2	7	12	10	14		CMP	24	176
2	9	12	11	14		CMP	36	80
2 TO 3	9	CS2	11	CS2		CMP	24	
2	11	12	13	14		CMP	36	175
2 TO 3	11	CS10	13	CS10		CMP	42	100
3	15	13	15	16		CMP	24	100
3	13	14	16	12		CMP	24	100
3	13	20	16	17		CMP	36	200
3	20	21	17	18		CMP	24	100
3	18	19	19	20		CMP	36	180
3	18	13	19	16		CMP	36	177
3	18	EST	19	EST		CMP	48	370
3	23	CS7	21	CS7		CMP	48	80
3	30	21	22	18		CMP	24	325
3	22	23	23	21		CMP	42	69
3	22	23	23	21	MH2	RCP	42	100
3	22	23	23	21	MH3	RCP	42	122
3	22	23	23	21				
				B4		RCP	42	133
3	22	23	23	21	B5	RCP	42	157
3	22	23	23	21	B6	RCP	42	101
3	22	23	23	21	B7	RCP	42	273
2	8	9	24	11		CMP	36	290
River Village	25	EST	26	EST		CMP	32	50
River Village	25	26	26	25		CMP	48	260
St Andrews	24	EST	27	EST		CMP	36	65
5	16E	1	6E	5		CMP	30	210
1 TO 2	CB1	CMP	CB1	CMP		RCP	54	221
2 TO 3	CB1	14	CB1	12		CMP	36	100
1 TO 2	CMP	11	CMP	13		CMP	54	362
Reserve	CS01	5	CS01	5		RCP	24	9
Reserve	CS02	O1	CS02	O1		CAP	18	65
1 TO 2	CS1	CB1	CS1	CB1		RCP	54	212
2 TO 3	CS10	13	CS10	16		CMP	42	120
2 TO 3	CS2	CB1	CS2	CB1		CMP	24	75
3 to EST	CS7	Est	CS7	EST		CMP	42	35
EST	DBL#2	EST	CS7	EST		CMP	72	180
EST	DBL#3	EST	CS7	EST		CMP	72	180
EST	DBL#1	EST	CS7	EST		CMP	72	240
EST	DBL#5	EST	CS7	EST		CMP	54	
EST	DBL#4	EST	CS7	EST		CMP	72	300
EST	DBL#6	EST	CS7	EST		CMP	42	85
EST	DBL#7	EST	CS7	EST		CMP	52	90
EST	DBL#8	EST	CS7	EST		CMP	72	95
EST	DBL#9	EST	CS7	EST		CMP	72	95
Reserve	D23	R1	D23	R1		RCP	24	408
Reserve	O1	CS01	O1	CS01		RCP	24	42
Reserve	R1	5	R1	5		RCP	24	481
Reserve	R2	R1	R2	R1		RCP	24	229
Reserve	R3	D23	R3	D23		RCP	18	335