



October 2019

Drainage Memorandum

Client: Oswegoland Park District
Project Name: Lakeview Basin Review
Project Location: Village of Oswego
Project Number: 191311 (HRG #)

Project Manager: Stephen Bicking, PE, DWRE, CFM

HR Green, Inc.
420 N. Front St. Suite 100
McHenry, Illinois 60050
Phone: (815) 385-1778
Fax: (815) 385-1781

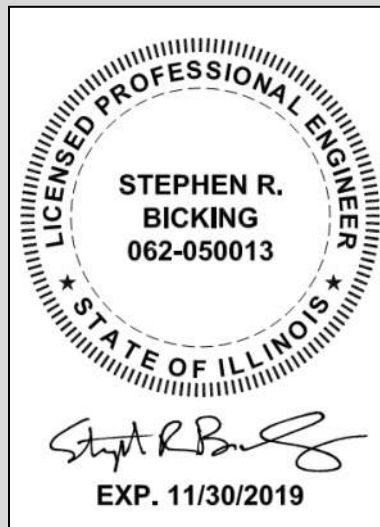


TABLE OF CONTENTS

- I. Narrative
 - Project Description
 - Datum Correlation
 - Outlet Plates
 - Overflow at Bikepath
 - USACE Coordination
 - Conclusion
- II. Location Map
- III. Pictures
 - 2008
 - 2019
- IV. USACE Coordination
 - Phone Conversation
 - Nationwide Permit #27
- V. Outlet Survey
- VI. Overflow Bikepath Survey
- VII. Field Book Notes
 - 2008
 - 2019

SECTION 1
NARRATIVE

Lakeview Drainage Update - 2019

Project Description

HR Green, Inc. (HRG) prepared this drainage update for Oswegoland Park District to verify the outlet structure elevations and determine the permitting necessary to increase the water level in the Lakeview Basin.

The Lakeview Basin is located in the Lakeview Subdivision in the southern part of the Village of Oswego, immediately south of the intersection of Illinois Route 71 and Forest Avenue. The basin's low flows currently outlet to the north through a 16" restrictor/weir plate that was placed by the Village of Oswego (16" wide by 18" height surveyed – 12" orifice proposed in 2004 Report and 2008 calculations) over the 42" storm sewer. The restrictor was placed over the 42" storm sewer outlet to control downstream flooding in Oswego. The basin overflows to the south into the Deerpath Subdivision via an overflow weir (existing bikepath).

SEC Group, Inc. (SEC) prepared a Drainage Analysis in December 2008 (HRG#080528) to determine the amount that the Lakeview basin's water surface elevation (WSE) can be increased. SEC also prepared a Drainage Analysis in March, 2004 (HRG#030369), which was based upon a Drainage Analysis prepared by the Lannert Group in 1991. The 2004 analysis was prepared to determine the best method of mitigating discharges from the Lakeview Basin through the Village of Oswego. As mentioned above, the restrictor added to the 42" outlet in 2004 functioned to reduce the basin's peak flow to the downstream channel, consequently the basin overtops more frequently southerly to Deerpath Subdivision. In addition to installing a restrictor on the low flow outlet, the overflow route through Deerpath Subdivision was to be lowered and regraded in 2004, resulting in a well-defined overflow route to Morgan Creek. The revisions to the overflow route also provided increased freeboard to the homes surrounding the Lakeview Basin. The Drainage Analysis prepared by SEC in 2004 summarized these design recommendations.

Datum Correlation

HRG completed a site survey in October, 2019 to compare with the survey that SEC completed in October, 2008. This was done to verify the 2008 datum was accurate and to determine if the plates on the outlet structure had been modified since 2008. The survey was completed in NAVD88 datum and the 2008 and 2019 elevations match within hundredths of a foot, confirming the survey elevations.

Outlet Plates

The 2019 surveyed elevation of the top outlet weir plate on the grate of the outlet structure is 635.64. In 2008, the top of the outlet weir plate was 636.09 (see included pictures). In 2003 (elevations adjusted for datum difference), the actual WSE was 635.45

and the design was 635.62, which correlates with the current top of weir. Since the WSE fluctuates with rainfall, the weir plate elevation can be used as a guide. As shown in the attached pictures, the 2008 outlet weir plate was not as wide as the current plates, which would allow the WSE to drop lower than the plate elevation. The edge of water was 635.85 in 2019 and 635.95 in 2008, although at the time of 2019 survey, the location had just experienced significant rainfall and the water was a few inches over the weir, pictures from 2008 indicate the water was below the weir.

Overflow at Bike Path

In 2003, the bikepath overflow elevation was 640.63. In 2008, the elevation was 640.5 and the 2019 bikepath elevation is 640.48. The bikepath is gravel, so slight variations in the elevation are expected.

USACE Coordination

HRG has contacted Donna Jones at the Army Corp of Engineers (USACE) Rock Island District to determine the options for the raising the WSE in the basin and the necessary permitting involved, if any.

The WSE can be increased to make the basin deeper by changing the level of the plates on the outlet weir. The existing wetland area would need to be delineated and the area of wetlands currently existing needs to be maintained (no net loss). Since an increase in WSE would impact the existing emergent wetland by inundating them, grading in an upland area or adjacent area that is not currently wetland would be necessary to allow the emergent wetlands to reestablish themselves. This work would be covered by Nationwide Permit #27.

Conclusion

Between October 2008 and now, the top of the weir plate controlling the WSE out of the Lakeview basin was lowered by 0.45 feet to an elevation of 635.64, so some of the calculations completed in 2008 may need to be updated with new elevations. The current elevation does appear to match well to the 2003 elevation that was surveyed prior to the outlet being modified in 2004.

Based on our discussions with the USACE, in order to raise the Lakeview Basin's WSE as wetland delineation will need to be completed and there can be no net loss in wetlands that are currently existing in the basin to be covered by Nationwide Permit #27. If there is a desire to raise the basin's WSE, our previous modeling indicates that there should be sufficient storage to allow some increase in WSE while maintaining the required stormwater detention volume in the basin and providing freeboard to the homes surrounding the basin.

SECTION 2

LOCATION MAP

Location

Outlet Structure

North

Overflow Along Bikepath to South



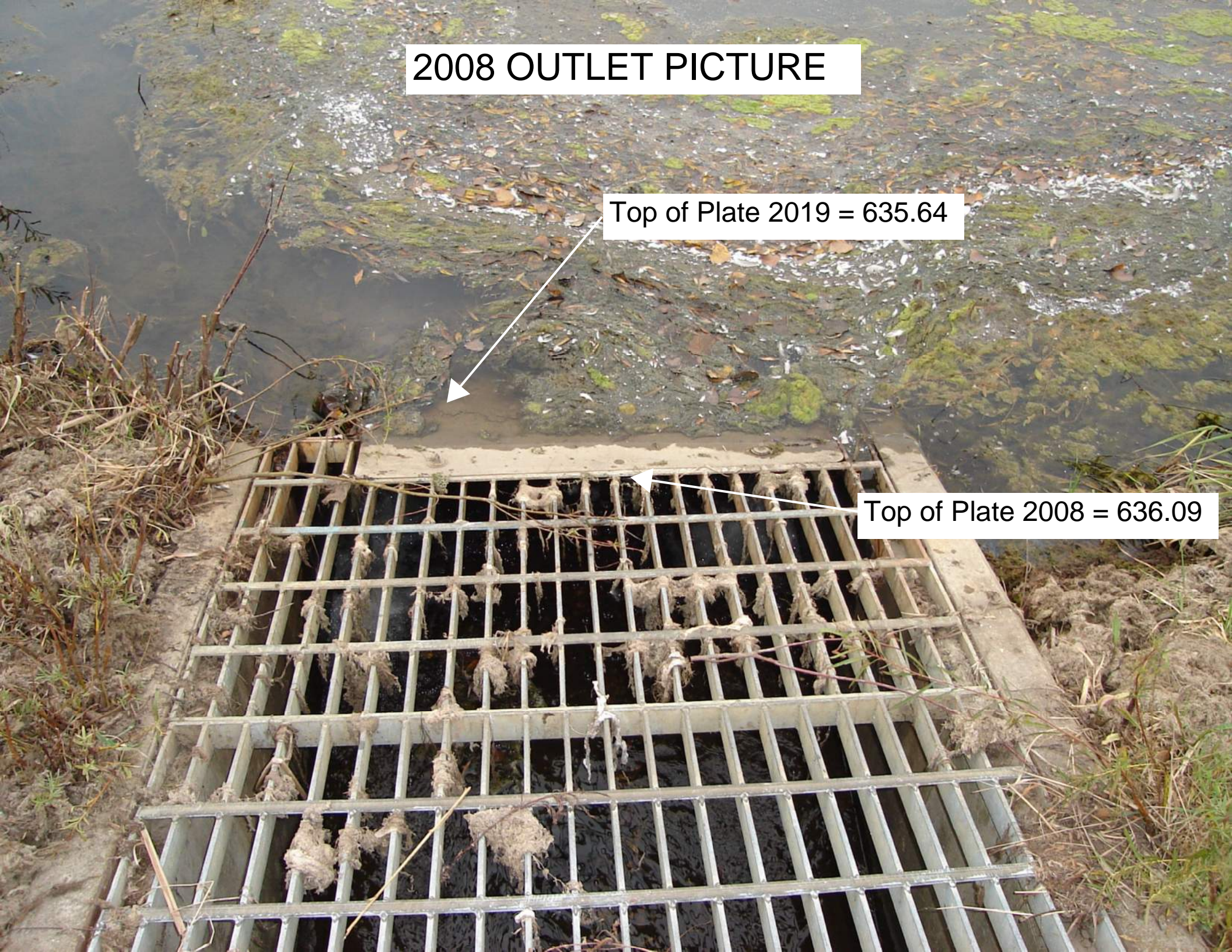
SECTION 3

PICTURES

2008 OUTLET PICTURE

Top of Plate 2019 = 635.64

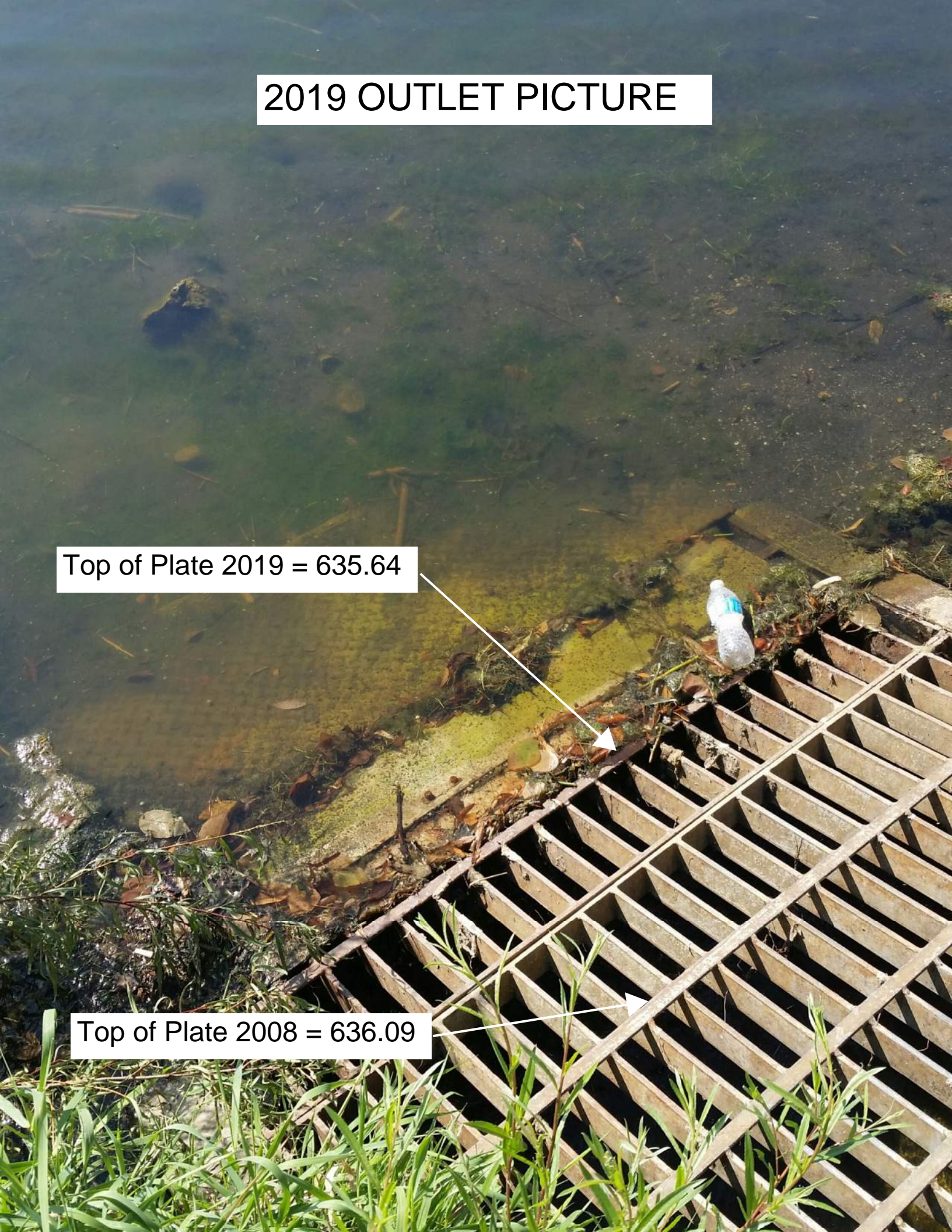
Top of Plate 2008 = 636.09



2019 OUTLET PICTURE

Top of Plate 2019 = 635.64

Top of Plate 2008 = 636.09



SECTION 4

USACE COORDINATION



Phone Conversation Record

Date: October 16, 2019 Time: 9:30 – 10:00

Call: Made: ☒ Received: ☐ Copies to: _____

Telephone Number: 309-794-5371 Route to: _____

Conversed with: Donna Jones Of: USACE – Rock Island

Project Name and Number: Lakeview Basin Update

Discussed:

We discussed the options for making the Lakeview Basin deeper. There are two options that we discussed:

1. The basin can excavated and the material hauled off or respread. If the material is respreads, then the material can't be placed in the adjoining wetlands. Making the basin deeper using this method may help to alleviate some of the weeds in the basin. The excavation of the material (excess sediment) in the basin would not need a USACE permit if the wetland impact (access, etc.) would only be temporary.
2. The water surface elevation (WSE) can be increased to make the basin deeper by changing the level of the plates on the outlet weir. The existing wetland area would need to be delineated and the area of wetlands can't be reduced. An increase in WSE would impact the existing emergent wetland by inundating them, so grading in an upland area or adjacent area would be required that would allow the emergent wetlands to reestablish themselves. This work would be covered by Nationwide Permit #27.

Action Required:

Incorporate options into Drainage Memorandum

By: Steve Bicking

Nationwide Permit 27 - Aquatic Habitat Restoration, Enhancement, and Establishment Activities

Effective Date: March 19, 2017; Expiration Date: March 18, 2022

(NWP Final Notice, 82 FR 1860)

Nationwide Permit 27 - Aquatic Habitat Restoration, Enhancement, and Establishment Activities. Activities in waters of the United States associated with the restoration, enhancement, and establishment of tidal and non-tidal wetlands and riparian areas, the restoration and enhancement of non-tidal streams and other non-tidal open waters, and the rehabilitation or enhancement of tidal streams, tidal wetlands, and tidal open waters, provided those activities result in net increases in aquatic resource functions and services.

To be authorized by this NWP, the aquatic habitat restoration, enhancement, or establishment activity must be planned, designed, and implemented so that it results in aquatic habitat that resembles an ecological reference. An ecological reference may be based on the characteristics of an intact aquatic habitat or riparian area of the same type that exists in the region. An ecological reference may be based on a conceptual model developed from regional ecological knowledge of the target aquatic habitat type or riparian area.

To the extent that a Corps permit is required, activities authorized by this NWP include, but are not limited to: the removal of accumulated sediments; the installation, removal, and maintenance of small water control structures, dikes, and berms, as well as discharges of dredged or fill material to restore appropriate stream channel configurations after small water control structures, dikes, and berms, are removed; the installation of current deflectors; the enhancement, rehabilitation, or re-establishment of riffle and pool stream structure; the placement of in-stream habitat structures; modifications of the stream bed and/or banks to enhance, rehabilitate, or re-establish stream meanders; the removal of stream barriers, such as undersized culverts, fords, and grade control structures; the backfilling of artificial channels; the removal of existing drainage structures, such as drain tiles, and the filling, blocking, or reshaping of drainage ditches to restore wetland hydrology; the installation of structures or fills necessary to restore or enhance wetland or stream hydrology; the construction of small nesting islands; the construction of open water areas; the construction of oyster habitat over unvegetated bottom in tidal waters; shellfish seeding; activities needed to reestablish vegetation, including plowing or disking for seed bed preparation and the planting of appropriate wetland species; re-establishment of submerged aquatic vegetation in areas where those plant communities previously existed; re-establishment of tidal wetlands in tidal waters where those wetlands previously existed; mechanized land clearing to remove non-native invasive, exotic, or nuisance vegetation; and other related activities. Only native plant species should be planted at the site.

This NWP authorizes the relocation of non-tidal waters, including non-tidal wetlands and streams, on the project site provided there are net increases in aquatic resource functions and services.

Except for the relocation of non-tidal waters on the project site, this NWP does not authorize the conversion of a stream or natural wetlands to another aquatic habitat type (e.g., the conversion of a stream to wetland or vice versa) or uplands. Changes in wetland plant communities that occur when wetland hydrology is more fully restored during wetland rehabilitation activities are not considered a conversion to another aquatic habitat type. This NWP does not authorize stream channelization. This NWP does not authorize the relocation of tidal waters or the conversion of tidal waters, including tidal wetlands, to other aquatic uses, such as the conversion of tidal wetlands into open water impoundments.

Compensatory mitigation is not required for activities authorized by this NWP since these activities must result in net increases in aquatic resource functions and services.

Reversion. For enhancement, restoration, and establishment activities conducted: (1) In accordance with the terms and conditions of a binding stream or wetland enhancement or restoration agreement, or a wetland establishment agreement, between the landowner and the U.S. Fish and Wildlife Service (FWS), the Natural Resources Conservation Service (NRCS), the Farm Service Agency (FSA), the National Marine Fisheries Service (NMFS), the National Ocean Service (NOS), U.S. Forest Service (USFS), or their designated state cooperating

agencies; (2) as voluntary wetland restoration, enhancement, and establishment actions documented by the NRCS or USDA Technical Service Provider pursuant to NRCS Field Office Technical Guide standards; or (3) on reclaimed surface coal mine lands, in accordance with a Surface Mining Control and Reclamation Act permit issued by the Office of Surface Mining Reclamation and Enforcement (OSMRE) or the applicable state agency, this NWP also authorizes any future discharge of dredged or fill material associated with the reversion of the area to its documented prior condition and use (i.e., prior to the restoration, enhancement, or establishment activities). The reversion must occur within five years after expiration of a limited term wetland restoration or establishment agreement or permit, and is authorized in these circumstances even if the discharge occurs after this NWP expires. The five-year reversion limit does not apply to agreements without time limits reached between the landowner and the FWS, NRCS, FSA, NMFS, NOS, USFS, or an appropriate state cooperating agency. This NWP also authorizes discharges of dredged or fill material in waters of the United States for the reversion of wetlands that were restored, enhanced, or established on prior-converted cropland or on uplands, in accordance with a binding agreement between the landowner and NRCS, FSA, FWS, or their designated state cooperating agencies (even though the restoration, enhancement, or establishment activity did not require a section 404 permit). The prior condition will be documented in the original agreement or permit, and the determination of return to prior conditions will be made by the Federal agency or appropriate state agency executing the agreement or permit. Before conducting any reversion activity the permittee or the appropriate Federal or state agency must notify the district engineer and include the documentation of the prior condition. Once an area has reverted to its prior physical condition, it will be subject to whatever the Corps Regulatory requirements are applicable to that type of land at the time. The requirement that the activity results in a net increase in aquatic resource functions and services does not apply to reversion activities meeting the above conditions. Except for the activities described above, this NWP does not authorize any future discharge of dredged or fill material associated with the reversion of the area to its prior condition. In such cases a separate permit would be required for any reversion.

Reporting. For those activities that do not require pre-construction notification, the permittee must submit to the district engineer a copy of: (1) The binding stream enhancement or restoration agreement or wetland enhancement, restoration, or establishment agreement, or a project description, including project plans and location map; (2) the NRCS or USDA Technical Service Provider documentation for the voluntary stream enhancement or restoration action or wetland restoration, enhancement, or establishment action; or (3) the SMCRA permit issued by OSMRE or the applicable state agency. The report must also include information on baseline ecological conditions on the project site, such as a delineation of wetlands, streams, and/or other aquatic habitats. These documents must be submitted to the district engineer at least 30 days prior to commencing activities in waters of the United States authorized by this NWP.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing any activity (see general condition 32), except for the following activities:

- (1) Activities conducted on non-Federal public lands and private lands, in accordance with the terms and conditions of a binding stream enhancement or restoration agreement or wetland enhancement, restoration, or establishment agreement between the landowner and the FWS, NRCS, FSA, NMFS, NOS, USFS or their designated state cooperating agencies;
- (2) Voluntary stream or wetland restoration or enhancement action, or wetland establishment action, documented by the NRCS or USDA Technical Service Provider pursuant to NRCS Field Office Technical Guide standards; or
- (3) The reclamation of surface coal mine lands, in accordance with an SMCRA permit issued by the OSMRE or the applicable state agency.

However, the permittee must submit a copy of the appropriate documentation to the district engineer to fulfill the reporting requirement. (Authorities: Sections 10 and 404)

Note: This NWP can be used to authorize compensatory mitigation projects, including mitigation banks and in-lieu

fee projects. However, this NWP does not authorize the reversion of an area used for a compensatory mitigation project to its prior condition, since compensatory mitigation is generally intended to be permanent.

A. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/ or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. **Navigation.** (a) No activity may cause more than a minimal adverse effect on navigation. (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States. (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. **Aquatic Life Movements.** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. **Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. **Migratory Bird Breeding Areas.** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. **Shellfish Beds.** No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. **Suitable Material.** No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. **Water Supply Intakes.** No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. **Adverse Effects from Impoundments.** If the activity creates an impoundment of water, adverse effects

SECTION 5
OUTLET SURVEY

OUTLET STRUCTURE SURVEY 2019

STORM MANHOLE
RIM: 641.92
(2008 SURVEY: 641.94)
(1992 RD: 642.31)
INV N/SE (42" RCP): 633.42
(1992 RD: 633.61)

NOTE:
PER 2008 SURVEY, OUTFLOW STRUCTURE HAD
AN ADDITIONAL PLATE. TOP OF PLATE: 636.09

TOP OF HEADWALL: 638.37
(2008 SURVEY: 638.39)
42" RCP WITH STEEL RESTRICTOR PLATE
INV (16" ORIFICE): 633.37
(2008 SURVEY: 633.37)
(1992 RD: 633.70)
TOP OF RESTRICTOR PLATE: 636.22
(200 SURVEY: 636.24)

TOP OF 4" PLATE: 635.64
TOP OF 8" PLATE = 635.58
TOP OF 19" PLATE = 635.34

EDGE OF WATER: 635.85
(2008 SURVEY: 635.95)
STRUCTURE INV: 634.83
(1992 RD: 635.16)

SECTION 6
OVERFLOW BIKEPATH SURVEY

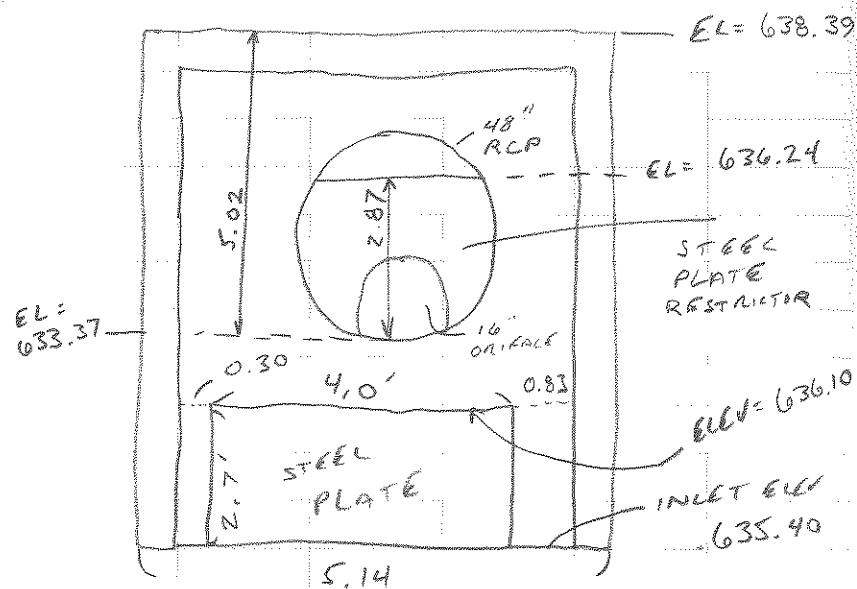


OVERFLOW ROUTE SURVEY 2019

·640.901 ·640.689 ·640.477 ·640.849 ·640.603 ·640.712 ·640.606 ·640.953 ·640.787 ·640.652 ·640.521 ·640.867

2019 South Bikepath Overflow = 640.48
2008 South Bikepath Overflow = 640.5

SECTION 7
FIELD BOOKS



BOX INVERT DETAIL @ NW
CORNER OF POND

10/13/08

080528-0CPD

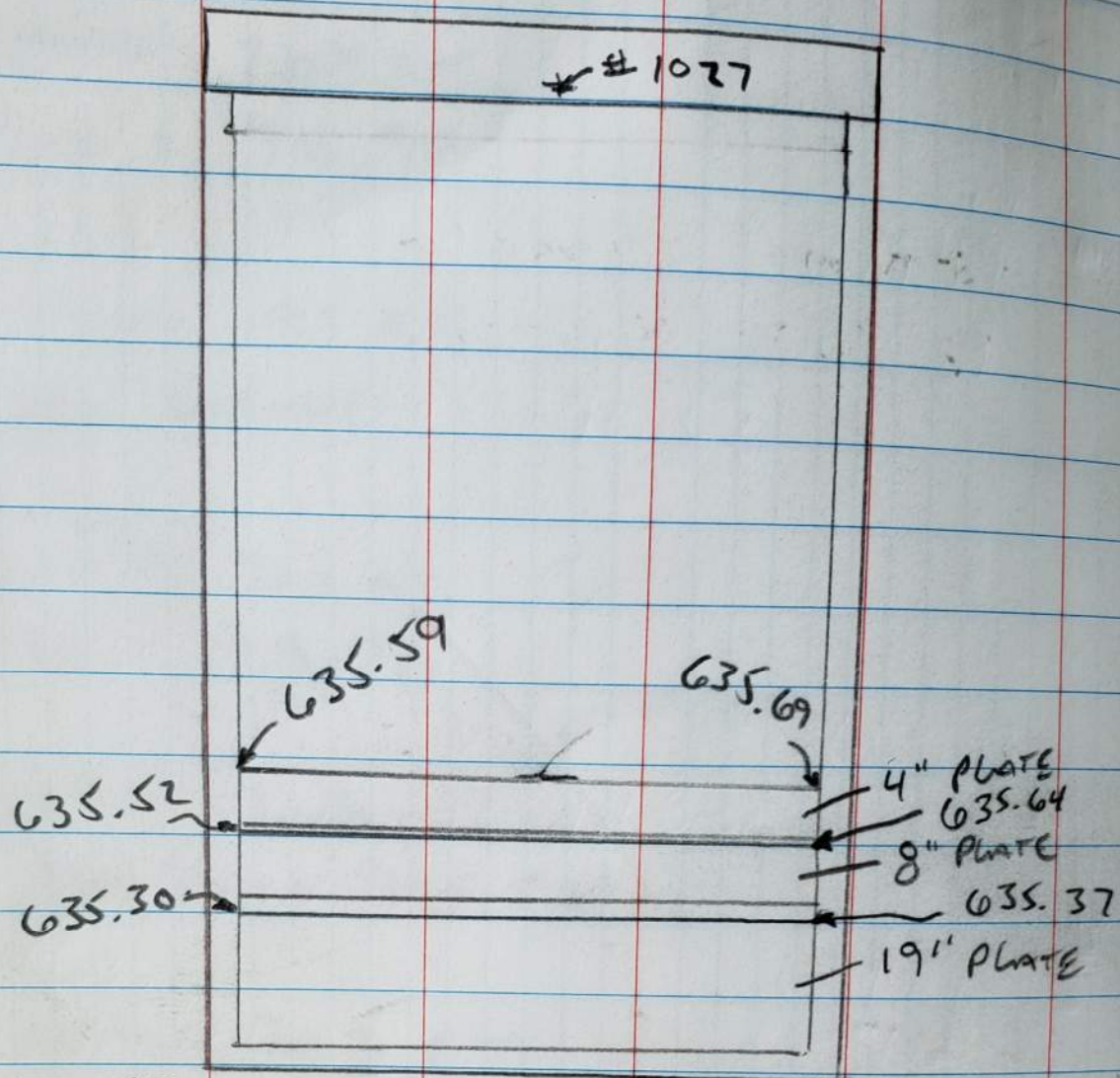
BK: Y-12

BB

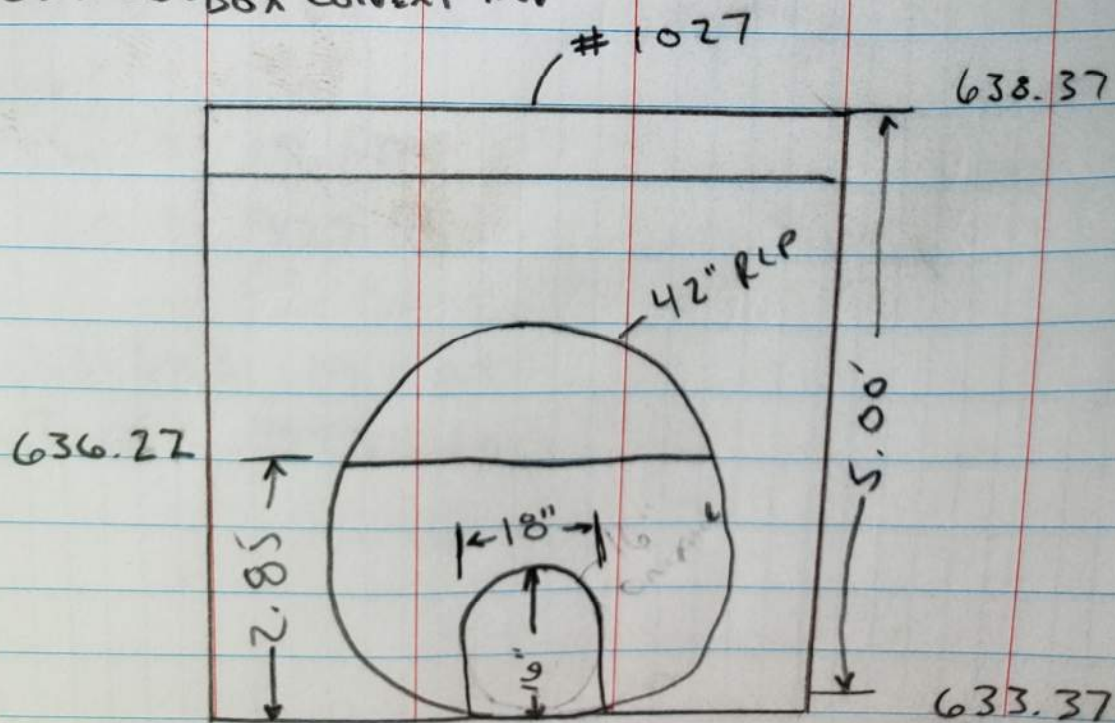
PG: 68

75' OVERCAST

42" RCP verified as outlet pipe October 2019



634.83 = Box Culvert INV



19/3/11
LAKELAND BASIN OUTFLOW
10/3/2019 - BB

Y-43/30

#-1019 - STM MH Rim = 641.92
INV N (42") = 8.50 FE = 633.42
INV SE (42") = 8.50 FE = 633.42

T Box Culvert (#1027) = 638.37

42" RCP INV = 633.37

Top of Restriction = 636.22

Box Culvert INV = 634.83

* 100% Confirmed 42" RCP on 10/16/19

633.37