

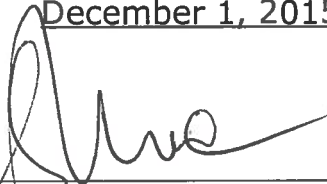
DAM & DIKE INSPECTION REPORT

Bottom Ash Complex Stingy Run Fly Ash Dam

**GAVIN PLANT
CHESHIRE, OHIO**

INSPECTION DATE December 1, 2015

PREPARED BY


Shahriyar S. Baig, P.E.


DATE 12-22-15

REVIEWED BY

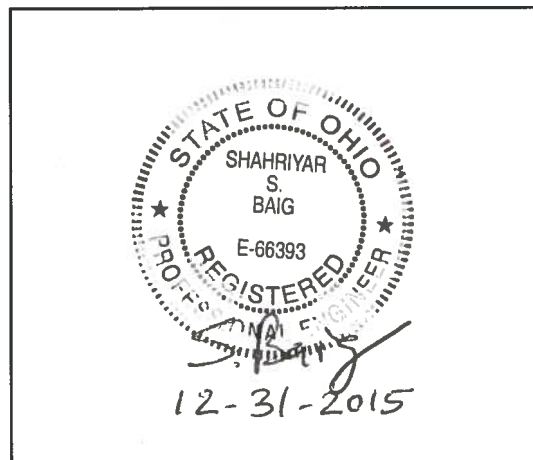

Dan W. Pizzino, P.E.

DATE 12/22/2015

APPROVED BY


Gary Zych, P.E.
Manager - Civil Engineering

DATE 12/31/2015



**PROFESSIONAL ENGINEER
SEAL & SIGNATURE**

2015 DAM AND DIKE INSPECTION REPORT
Bottom Ash Complex and Stingy Run Fly Ash Dam

GERS-15-030

GAVIN PLANT
CHESHIRE, OHIO

PREPARED BY
GEOTECHNICAL ENGINEERING
AEP SERVICE CORPORATION
1 RIVERSIDE PLAZA
COLUMBUS, OHIO

2015 ANNUAL DIKE AND DAM INSPECTION REPORT
Bottom Ash Complex and Stingy Run Fly Ash Dam
Gen. James M. Gavin Plant
Cheshire, OH

December 23, 2015

Table of Contents

1.0	INTRODUCTION.....	1
2.0	SUMMARY OF VISUAL INSPECTION TERMS	1
3.0	BOTTOM ASH COMPLEX.....	2
	3.1 West Dike Section	2
	3.2 South Dike Section	3
	3.3 East Dike Section	4
	3.4 North Dike Section	5
	3.5 Reclaim Pond	6
4.0	STINGY RUN FLY ASH DAM.....	6
5.0	POND COMPLEX CAPACITY AND DEPTH DATA.....	9
6.0	ASSESSMENT OF RECENT INSTRUMENTATION DATA.....	10
	6.1 Bottom Ash Complex.....	10
	6.2 Stingy Run Fly Ash Dam	10
	6.2.1 Observation Wells and Piezometers	10
	6.2.2 Seepage Measurement Weirs	11
	6.2.3 Slope Inclinator and Deformation Monuments	11
7.0	CONCLUSIONS & RECOMMENDATIONS.....	12

APPENDIX A

- Figure 1 - Bottom Ash Complex
- Figure 2 - Stingy Run Fly Ash Dam

APPENDIX B

- Figures 3 - 7 Inspection Maps (Bottom Ash Complex)
- Figure 8 - Inspection Maps (Stingy Run Fly Ash Dam)
- Inspection Photographs

APPENDIX C

- Figure 9a – Piezometers Location Map
- Figure 9b – Piezometer Data of the Bottom Ash Pond
- Figure 10a – Observation Wells Location Map
- Figure 10b – Observation Wells Water Elevation
- Figure 11 – Weirs Location Map
- Table 1 – Flow Measurements of Weirs
- Figure 12 – Deformation Monuments Location Map
- Table 2 – Summary of Deformation Data
- Figure 13 – Slope Inclinometers Location Map
- Table 3 – Summary of Slope Inclinometer 1 Monitoring Results
- Table 4 – Summary of Slope Inclinometer 2 Monitoring Results

1.0 INTRODUCTION

The Annual Dike and Dam Inspection Report prepared by AEP-Civil Engineering in part to fulfill the requirements of the Ohio Department of Natural Resources (ODNR), Division of Water, Dam Inspection Section and also to comply with the requirements of the April 17, 2015 published United State Environmental Protection Agency (USEPA) rule 40 CFR Part 257, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities (CCR rules). This inspection report includes two facilities as follows illustrated in Figures 1 and 2: (i) Bottom Ash Complex, and (ii) Stingy Run Fly Ash Dam. The report presents the inspection findings, photographic description, instrumentation data, conclusions, and recommendations.

Mr. Douglas E. Workman, landfill supervisor at the Gavin Plant, was the facility contact and facilitated the inspection activities. The inspection was performed by Mr. Shah Baig, P.E. on December 1, 2015. Weather conditions were generally good with cloudy skies in the early morning and clear skies in mid-morning, light wind, visibility fair, and temperatures ranging in the 50's Fahrenheit. In the last 7 days the recorded precipitation was about 1.25 inch including the day of inspection with light rain showers.

2.0 SUMMARY OF VISUAL INSPECTION TERMS

The terms used for visual observations to describe the general appearance or condition of an observed item, activity, or structure are listed and defined as follows.

Good A condition or activity that is generally better or slightly better than what is minimally expected or anticipated from a design or maintenance point of view.

Fair/Satisfactory A condition or activity that generally meets what is minimally expected or anticipated from a design or maintenance point of view.

Poor	A condition or activity that is generally below what is minimally expected or anticipated from a design or maintenance point of view.
Minor	A reference to an observed item (e.g. erosion, seepage, vegetation, etc.) where the current maintenance condition is below what is normal or desired, but which is not currently causing concern from a structure safety or stability point of view.
Significant	A reference to an observed item (e.g. erosion, seepage, vegetation, cracks, concrete surface etc.) where the current maintenance program has neglected to improve the condition. Usually, conditions that have been identified in previous inspections, but have not been corrected.
Excessive	A reference to an observed item (e.g. erosion, seepage, vegetation, etc.) where the current maintenance condition is above or worse than what is normal or desired, and which may have affected the ability of the observer to properly evaluate the structure or particular area being observed or which may be a concern from a structure safety or stability point of view.

3.0 BOTTOM ASH COMPLEX

The bottom ash complex consists of the main bottom ash pond and an interior reclaim water pond as shown in Figure 1. Deficiencies noted in the previous inspection have been repaired. Results of the visual inspection are summarized below.

3.1 West Dike Section (Figure 3)

- (i) The crest of the dike appeared in good condition as indicated in Photograph No. 1. No misalignment, settlement, or excessive rutting was noticed. The typical view of the upstream slope is shown in Photograph No. 2. Overall, the upstream slope

appeared in good and stable condition with controlled vegetation. Some minor erosion due to beach action was noted along the waterline (Photograph No. 3).

- (ii) View of the downstream slope is illustrated in Photographs No. 4 and 5. Also shown is the service road in these photographs. In general the entire slope appeared in good and stable condition with well-maintained and controlled vegetation growth. The service road and drainage ditch along the toe of the downstream slope were in good condition, positive grade, and clear from weeds and bushes.
- (iii) The pipe culvert at the end of the ditch to the south is illustrated in Photograph No. 6. The pipe culvert indicated some standing water but flow was still exiting the ditch through the culvert indicating positive drainage.
- (iv) The southwest corner of the downstream slope is illustrated in Photograph No. 7. The slope and the toe area adjacent to the slope appeared in good and stable condition with controlled vegetation. The southwest corner at the upstream side is illustrated in Photograph No. 8. This area is designated for temporary storage of plant waste materials. This area was well maintained and confined to this area.

3.2 South Dike Section (Figures 4A and 4B)

- (i) An overall view of the downstream slopes of the south dike is illustrated in Photographs No. 9 and 10. Overall the vegetation cover on the slopes was well maintained and in good condition. The crest of the dike is illustrated in Photograph No. 9 appeared in good and stable condition without any signs of settlement, misalignment, and depression. The toe ditch along the chain link fence appeared in good condition with positive flow.
- (ii) Photograph No. 11 shows an area where the underground culvert is located and collects the surface runoff and drains to the ditch on the other side of the property boundary. A chain link fence is located where the underground pipe culvert is

present. The fence is the boundary line between the Gavin and Kyger Creek plants. The function of the culvert is to discharge surface runoff from this area at the toe of the dike (Gavin plant) to the ditch on the other side of the property boundary (Kyger plant). The toe ditch at the pipe culvert was slightly wet due to recent rain but indicated positive drainage.

- (iii) Photograph No. 12 illustrate the upstream slope of the south dike. A buttress at the toe of the interior slope is placed using bottom ash. Overall the upstream slope appeared in good and stable condition. Erosion gullies previous noticed have being repaired (Photograph No. 13).

3.3 East Dike Section (Figure 5)

- (i) Photograph No. 14 illustrate overall view of the upstream slope of the east dike. Most of the interior slope was buttressed with stockpiles of bottom ash. This area of the pond is historically used for bottom ash management (excavating and hauling operations). The upstream slope appeared good and in stable condition.
- (ii) Photographs No. 15-17 illustrate the three sets of ash pipes and support structure. The pipes and structure appeared to be in good and functional condition.
- (iii) The crest also used for vehicular traffic and upstream slope is illustrated in Photograph No. 18. The crest appeared in good and stable condition and no sign of significant misalignment or settlement was observed.
- (iv) Photographs No. 19 and 20 illustrate upper downstream slope, intermediate bench, and the lower section of the downstream slope and State Route 7 located east of the dike. The intermediate bench appeared in good condition and no sign of settlement or misalignment was noticed. The ash pipes are functioning as designed. The toe of the slope appeared dry and no standing water or soft areas were noticed. Few small depressed areas on the lower slope were noticed.

Typical view of these two areas is shown in Photograph No. 20. No significant change was noticed in these areas and should continue to be monitored.

3.4 North Dike Section (Figure 6A and 6B)

- (i) The upstream slope of the north dike is illustrated in Photograph No. 21. The slope appeared in good and stable condition. Several discharge pipes are present along this slope. Ash deposits were present along the toe of the upstream slope of the dike. The discharge pipes and support structures were in good functional condition. An erosion gully with depression (Photograph No. 22) was noticed at the northeast end. The two sets of discharge pipes and supports illustrated in Photographs No. 23 and 24 were functioning properly. It appears that the slope liner of the north east discharge pipes may have a split seam at one location (see Photograph No. 23).
- (ii) The crest of this dike is illustrated in Photograph No. 25. The crest appeared in good and stable condition and no sign of misalignment, settlement or cracks was observed.
- (iii) The decant structure near the toe of the downstream slope is illustrated in Photographs No. 26 and 27. No leak or settlement around the structure was noticed. The water was flowing in the decant structure without and obstruction.
- (iv) The downstream slope is illustrated in Photographs No. 28 and 29. Overall, the downstream slope was in good and stable condition. Some minor erosion was noticed along the slope, which appeared to be from leakage of the conveyor along the crest. A typical condition is illustrated in Photograph No. 29.

3.5 Reclaim Pond (Figure 7A and 7B)

- (i) Overall typical view of the interior slope of the reclaim pond is shown in Photographs No. 30 and 31. The slope appeared in fair and stable condition with controlled vegetation. As noted in previous inspections, sloughing and scarping along the interior and also exterior slope was noticed. This condition had not significantly change since it was noticed in 2009. Sections of the interior slope protected by stone/riprap have not degraded compared to sections without protection. Plant is planning to repair the lower section of the slope.
- (ii) The overflow structures at the north and south dikes are illustrated in Photographs No. 32 through 35. The overflow structure including visible concrete, metal steps, railing, and deck platform appeared in good and functional condition.
- (iii) A typical view of the crest of the reclaim pond dike is illustrated in Photograph No. 36. The crest was in good and stable condition and no settlement, cracks, or misalignment was observed.

4.0 STINGY RUN FLY ASH DAM (Figure 8A and 8B)

At present, the flyash reservoir water level has being lowered for the closure project. The reservoir closure project activities have started this year. The water level in the pond has been lowered to approximately 663 feet and maintained consistently around this level.

- (i) Photograph No. 37 illustrates the hillside and left (north) abutment. The abutment and hillside appeared in good and stable condition. Unstable trees and excessive vegetation previously present were cleared.
- (ii) Typical views of the crest are shown in Photographs No. 38 and 39. Overall, the crest of the dam appeared in fair and stable condition. No signs of significant

- misalignment, cracking, significant depression, or settlement were observed. Due to construction activities rutting and potholes were noticed (see Photographs No. 38 and 39).
- (iii) A typical view of the downstream slope (looking south) above the intermediate bench is illustrated in Photographs No. 40. The upper downstream slope appeared in good and stable condition with well controlled vegetation.
 - (iv) Photographs No. 41 and 42 illustrate the overflow discharge structure and supports. A new access deck structure from the dam was installed. The stop logs from the overflow structure have been removed and syphons are installed for lowering water level (Photograph No. 43). The overflow structure and the supporting structure is in stable condition.
 - (v) The entire upstream slope was protected by rip rap cover placed over a geotextile fabric. The riprap is mostly removed and used in the construction of the new landfill. The upstream slope appeared in fair and stable condition (Photograph No. 44).
 - (vi) The downstream slope and the south (right) abutment is illustrated in Photographs No. 45 and 46. The hillside and the abutment are lowered due to excavation activities at the new landfill. It can be seen in Photograph No. 46 that the abutment/hillside is almost to the elevation of the dam. The downstream slope and the abutment appeared in good and stable condition.
 - (vii) The groin of the right abutment is illustrated in Photographs No. 47 and 48. The upper section of the groin indicated slightly overgrown vegetation but no wetness or soft area was noticed. Overall, the downstream slope along the groin appeared good and in stable condition with controlled vegetation and intact riprap.
 - (viii) The toe ditch (Photograph No. 49) is functioning with positive drainage but need clearing of vegetation growth on a regular basis. A stockpile of soil is temporarily

stored to the east side of the ditch. V-notched weirs (VW-1, VW-2, and VW-3) are located in the toe ditch. Photographs No. 50 and 51 illustrate weirs VW-1 and VW-2 located on the north at the downstream end of the ditch. All the weirs indicated negligible amount and unobstructed flow condition.

- (ix) An access road is constructed along the downstream slope at the north groin (Photograph No 52) to the upstream slope groin and connecting to the toe of the dam (Photograph No. 53). The access road is constructed to perform the construction activities at the new landfill and the pond closure. The dam slopes and groin appeared in good and stable condition.
- (x) The channel downstream of the weir was in fair and stable condition and indicated positive flow (Photographs No. 54 and 55). Few sections of the channel had overgrown vegetation with standing water but still indicated had positive drainage.
- (xi) Two pipes culvert is located at the Outfall #001 (Photographs No. 56 and 57). Both the inlet and outlet ends of the pipes are illustrated in these photographs. Typically, one pipe culvert carries majority of the flow and the other pipe culvert is used during high flows. These pipes connect the open channel and a tributary that lead to the creek. The culvert appeared to have enough capacity for the present flow condition and increased flow due to lowering of the reservoir.

5.0 POND COMPLEX CAPACITY AND DEPTH DATA

Based on the previous measurements and estimates and operational variation in the pond system, the capacity and volume estimates for the Flyash, Bottom ash, and Clearwater ponds are provided below.

Pond		Media	Maximum	Minimum	Present
			Depth/Elevation (feet)		
Flyash	North Area	Water	2/675	1/674	1.5/674.5
		Solid	6/673		
	Middle Area	Water	2/700	1/699	1/699
		Solid	4/668		
	South Area	Water	2/668	1/667	1/667
		Solid	4/666		
	Dam	Water	3/665	2/663	2/663
		Solid	60/662	5/655	NA
Bottom Ash	Water	10/578.4	5/576.1	5/577	
	Solid	1/568.4	1/571.1	1/572	
Reclaim	Water	11.6/575.6	10.9/574.9	11.6/575.6	
	Solid	NA			

Pond	Capacity (acre-feet)		
	Water	Solid	Total
Fly Ash	1,500	8,400	9,900
Bottom Ash	187	40	227
Reclaim	116	NA	116

6.0 ASSESSMENT OF RECENT INSTRUMENTATION DATA

6.1 Bottom Ash Complex

Three piezometers are installed at the Bottom Ash Pond shown on Figure 9a. Two piezometers (BAP-1 and BAP-2) are present at the downstream on the west and south dikes of the complex. Piezometer BAP-3 is located at the east dike and was apparently damaged in the past. Based on AEP Drawing # 12-3015 and 12-3015A, the top elevation of the dikes is approximately 600 feet. Figure 9b provides the static water elevation at the west and southwest section of the pond between April 2002 and December 2015. In last five years the highest static water elevation reading recorded was about 540 feet. The bottom ash and reclaim ponds water elevations are less than 580 feet during normal operations. At these levels there is available freeboard of greater than 15 feet. The fluctuation in water elevation is considered normal and within historic range.

6.2 Stingy Run Fly Ash Dam

6.2.1 Observation Wells and Piezometers

The present revised monitoring plan includes four observation wells (OB-24, OB-28, OB-29, and OB-31) illustrated in Figure 10a. Recently OB-32 and OB-33 were abandoned and removed for the new landfill project. OB-24 appeared to be dry since 5/2012. All the other observation wells shown in Figure 10a have been discontinued. The locations of the observation wells are shown in Figure 10a. A historical plot of the observation wells water elevation is provided in Figure 10b. In the last 10 years, the static water levels are steady with very minor fluctuation. The historical water elevation data of the fly ash pond is shown in Figure 10b. The original crest elevation of the dam is approximately 735 feet, the south half of the crest was lowered about 4 feet. In 2014, the water elevation in the pond was lowered to approximately 663 feet which provides more than 50 feet of freeboard. Piezometer OB-28 is located at the crest of the dam on the north side and installed to the depth of the bottom ash drain. The static water elevation readings closely match the pond level.

6.2.2 Seepage Measurement Weirs

Three “V” notched weirs designated VW-1, VW-2, and VW-3, are located at the toe of the dam within the 10-foot wide toe ditch. Weir VW-3 is located upstream, followed by VW-2 and VW-1 at the downstream of the ditch. VW-3 is intended to measure seepage flow from the groin drain of the right abutment. VW-2 is intended to measure seepage flow collected from the dam clay core drain and VW-3. VW-1 is intended to measure VW-2 and flow from the left groin drain. Weirs location is illustrated in the Weir Location Map, Figure 11. Available data from field measurements at each weir from April 2001 through December 2015 are presented in Table 1. Since 2010, typically the discharge rates at all the weirs have recorded less than 2 gpm and lately dropped even further to less than 1 gpm due to lowering of the reservoir. Several readings show increased rates due to contributing rain flow.

6.2.3 Slope Inclinator and Deformation Monuments

In addition to the observation well, piezometers, and weirs mentioned above, the Fly Ash Dam consists of Slope Inclinator and Deformation Monuments. Due to recent construction activities and lowering of the reservoir and partially a section of the dam, a revised instrumentation plan will be developed. There are 15 deformation monuments designated SM-6 through SM-20 installed at toe, lower bench, face, and crest of the dam. The monument locations are included in Figure 12, Deformation Reference Points Location Map. Table 2 provides the deformation data for period between 1988 through 11/2015. The table shows the location, ID and deformation data for all the monuments. The deformation measurements are provided with +/- sign convention depending upon the direction of movement. Resultant horizontal and vertical deformation rate per year shown in the table is calculated until reading of 11/2015 from the initial base reading of 1988. The historical data indicates that the horizontal deformation of the main dam is generally in the east and north direction and the ranges between 0.01 to 0.26 inch/year. The maximum total vertical deformation ranged between 0 to 9.4 inches throughout the sections of the dam.

Two slope inclinometers are shown in Figure 13. Two slope inclinometers SI-1 and SI-2 are located on the lower bench at an approximate elevation 660 ft. The most recent data were provided in the Deformation Review survey report prepared by AEP Civil Laboratory (AEPCL), May 2015. The summary of the initial and the latest data (5/2015) for both slope inclinometers are tabulated in tables in the Appendix C. These tables provide depth, elevation, and lateral movements. Inclinometer SI-1 and SI-2 show total maximum lateral movement of less than 3 and 2 inches, respectively which are well within the expected magnitudes.

7.0 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Fly ash pond closure construction activities are in progress and will continue until completion the new landfill and pond closure. A section of the dam will be lowered at a later time with the closure of the pond.

All the routine maintenance items previously identified such as animal holes, erosion gullies, and vegetation control, drainage were addressed and completed. The plant continues to address any deficiencies noted in the inspection as soon as possible.

Based on the visual inspection, the Bottom Ash Complex and the Stingy Run Fly Ash Dam are in good condition. Maintenance, inspection, and monitoring activities are being performed. Following are the specific maintenance and/or repair recommendations.

RECOMMENDATIONS

Bottom Ash Complex

- (i) Repair erosion gullies and depressed area as noted. These areas shall be backfilled with compatible clean material followed by compaction.
- (ii) We recommend that the sloughing (beach erosion) at the Clearwater dike shall be recorded by the plant personnel in the quarterly inspection report. Alternately, plan on repairing the sloughing of the slopes by removing loose material, place geotextile

fabric on compacted subgrade, and backfill with riprap. A detailed plan will be provided by AEP-Geotechnical Engineering.

- (iii) Investigate the suspected liner seam split at the east discharge pipes of the north dike. If the liner seam is found split, it could be glued together. If there is any undermining of the slope, than the slope should be repaired before seaming the liner.
- (iv) Investigate the root cause of the erosion at the downstream slope of the north dike. It appears that it may be due to leaks in the conveyor belt along the crest of the dike. Repair erosion gullies by placing riprap to minimize frequent erosion of those locations.

Stingy Run Fly Ash Dam

- (i) Ruts and potholes at the crest shall be repaired on a regular basis before the area is significantly degraded further.
- (ii) Dam should be inspected with respect to the construction activities for the new landfill to make sure that the components of the dam are not significantly impacted.
- (iii) The channels, toe ditch, and intermediate pipe culverts downstream of the dam shall be kept clear of debris and vegetation with positive flow condition.

Based on the inspection and review of relevant quarterly inspection reports, the Bottom Ash Complex and Stingy Run Fly Ash Dam are in good condition considering the construction activities in the vicinity of the dam. Specific conclusions and recommendations for repair, maintenance, monitoring, and safety at those structures are presented above. Inspections, monitoring, and reporting by plant personnel should continue. If you have any questions with regard to this report, please do not hesitate to contact Shah Baig (Ph: 614-714-2241, email: sbaig@aep.com) or Gary Zych (614-716-2917).

APPENDIX A

- **Figure 1 - Bottom Ash Complex**
- **Figure 2 - Stingy Run Fly Ash Dam**



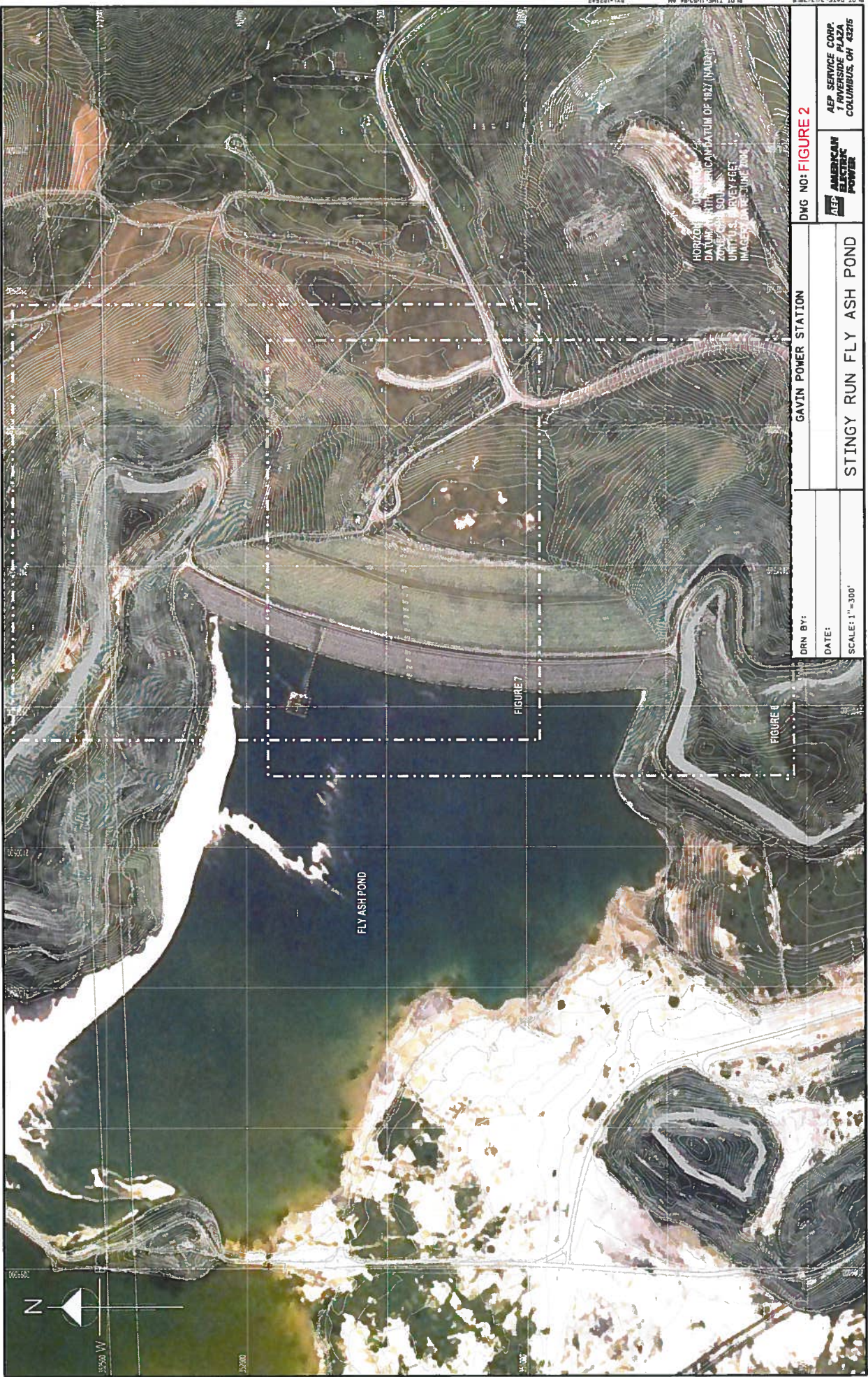
DWG NO: FIGURE 1
 ASP SERVICE CORP
 1 RIVERSIDE PLAZA
 COLUMBUS, OH 43215
 AMERICAN
 ELECTRIC
 POWER

GAVIN POWER STATION
 BOTTOM ASH COMPLEX

DRN BY:
 DATE:
 SCALE: 1" = 300'

HORIZONTAL CONTROL:
 DATUM: NORTH AMERICAN DATUM OF 1927 (NAD27)
 ZONE: OHIO SOUTHERN
 UNIT: U.S. SURVEY FEET
 IMAGERY DATE: AUG. 2007





15250 W

25000

35000

0005500

0050210

0025000

0000000

FLY ASH POND

FIGURE 7

FIGURE 6

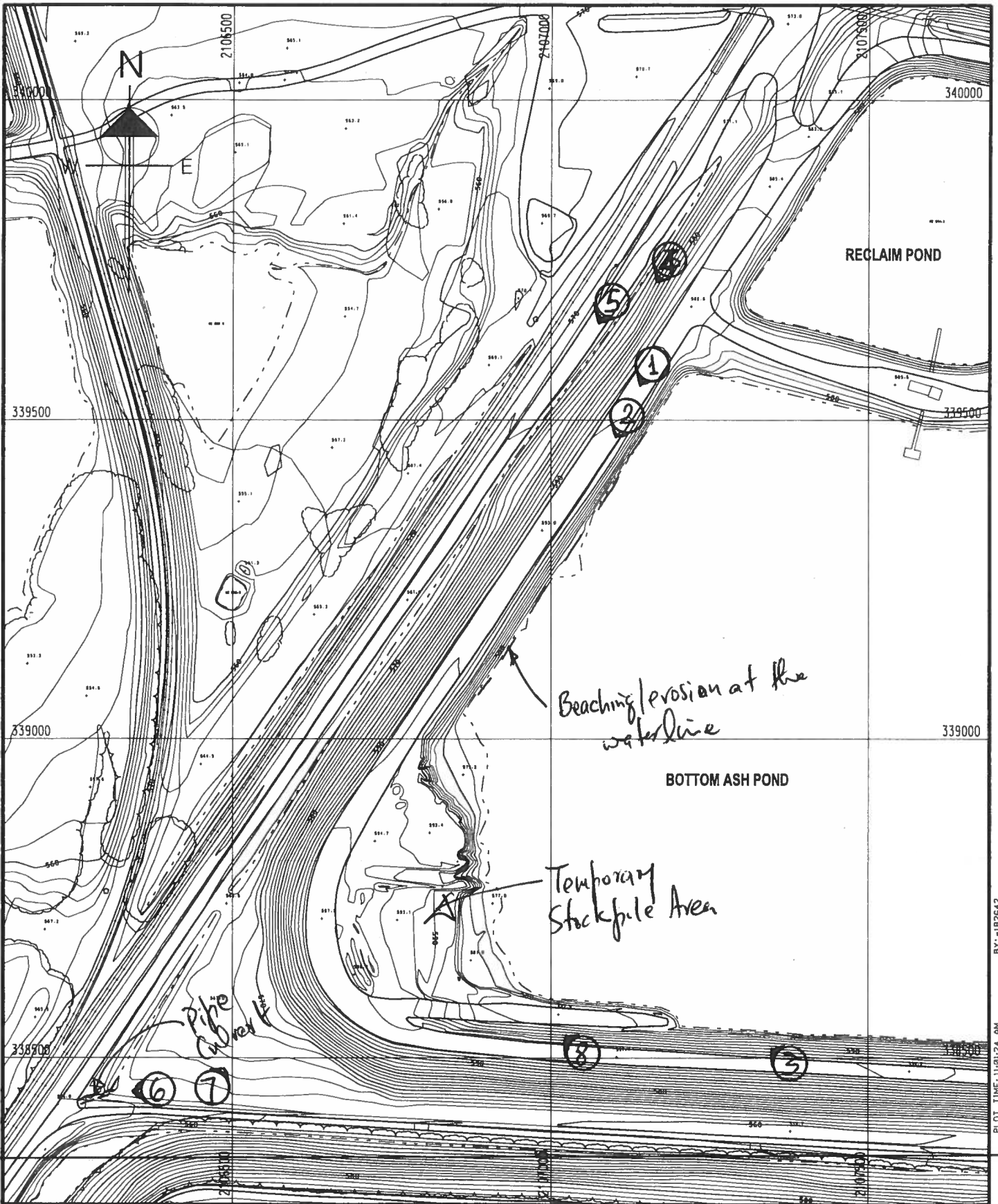
FIGURE 8

HORIZONTAL DATUM: NAD83
 ZONE: 18N
 UNIT: U.S. SURVEY FEET
 IMAGE DATE: JUNE 2004

GAVIN POWER STATION		DWG NO: FIGURE 2	
DRN BY:		REF AMERICAN ELECTRIC POWER	
DATE:		REF SERVICE CORP 1 RIVERSIDE PLAZA COLUMBUS, OH 43215	
SCALE: 1" = 300'		STINGY RUN FLY ASH POND	

APPENDIX B



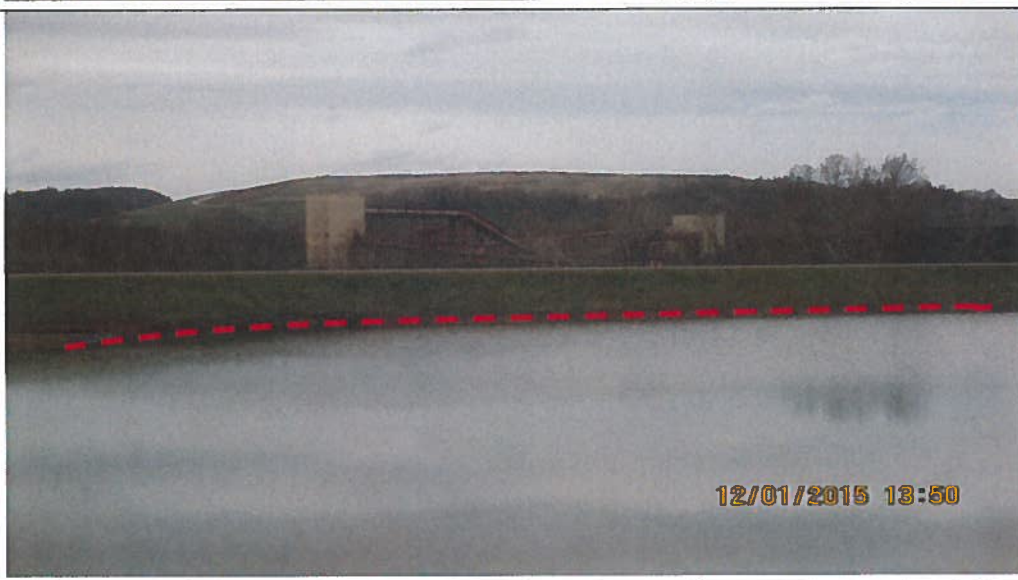
- Figures 3 - 7 Inspection Maps (Bottom Ash Complex)
- Figure 8 - Inspection Maps (Stingy Run Fly Ash Dam)
- Inspection Photographs






DRN BY:	GAVIN POWER STATION	DWG NO:	FIGURE 3
DATE:	WEST DIKE	AMERICAN ELECTRIC POWER AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215	
SCALE: 1"=200'	BOTTOM ASH COMPLEX		

PLOT TIME: 11/01/24 AM
 BY: s182642
 PLOT DATE: 10/14/2011

**2015 Annual Dam and Dike Inspection
Gavin Plant-Bottom Ash Complex (West Dike)**

<p>Photo # 1</p> <p>An overall view of the crest (looking south).</p>	
<p>Photo # 2</p> <p>Upstream slope of the dike (looking south) appeared good with controlled vegetation.</p>	
<p>Photo # 3</p> <p>Lower section of the upstream slope illustrates minor erosion.</p>	

**2015 Annual Dam and Dike Inspection
Gavin Plant-Bottom Ash Complex (West Dike)**

<p>Photo # 4</p> <p>The downstream slope of the west dike (north section).</p>	 <p>12/01/2015 13:35</p>
<p>Photo # 5</p> <p>The downstream slope of the west dike, access road, and toe ditch (looking south).</p>	 <p>12/01/2015 13:37</p>
<p>Photo # 6</p> <p>The pipe culvert the exit point of the ditch.</p>	 <p>12/01/2015 13:43</p>

**2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (West Dike)**

Photo # 7

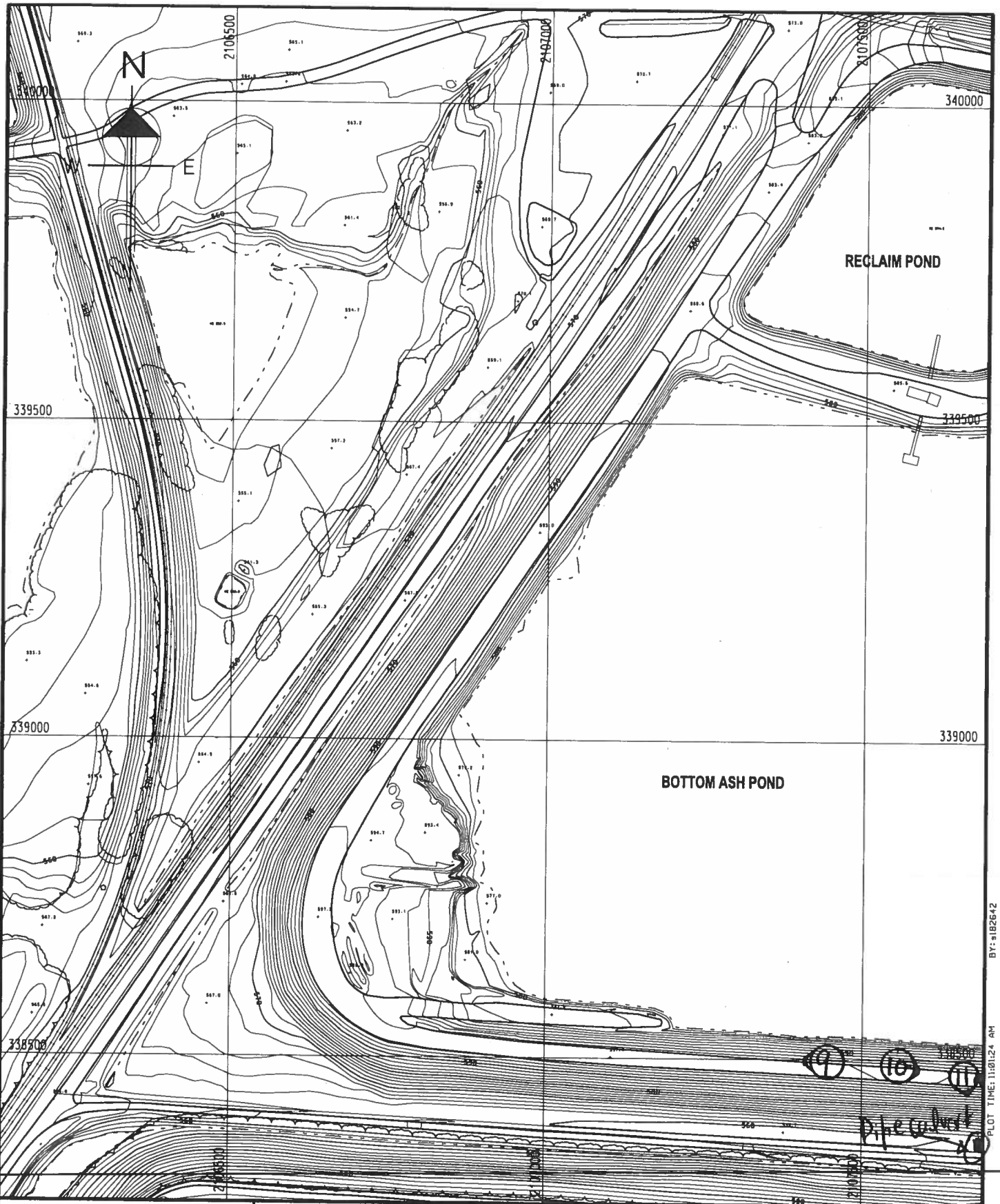
The downstream slope and adjacent toe area.



Photo # 8

Toe ditch pipe culvert at the south end (north side).





DRN BY:

GAVIN POWER STATION

DWG NO: FIGURE 4A

DATE:

SOUTH DIKE

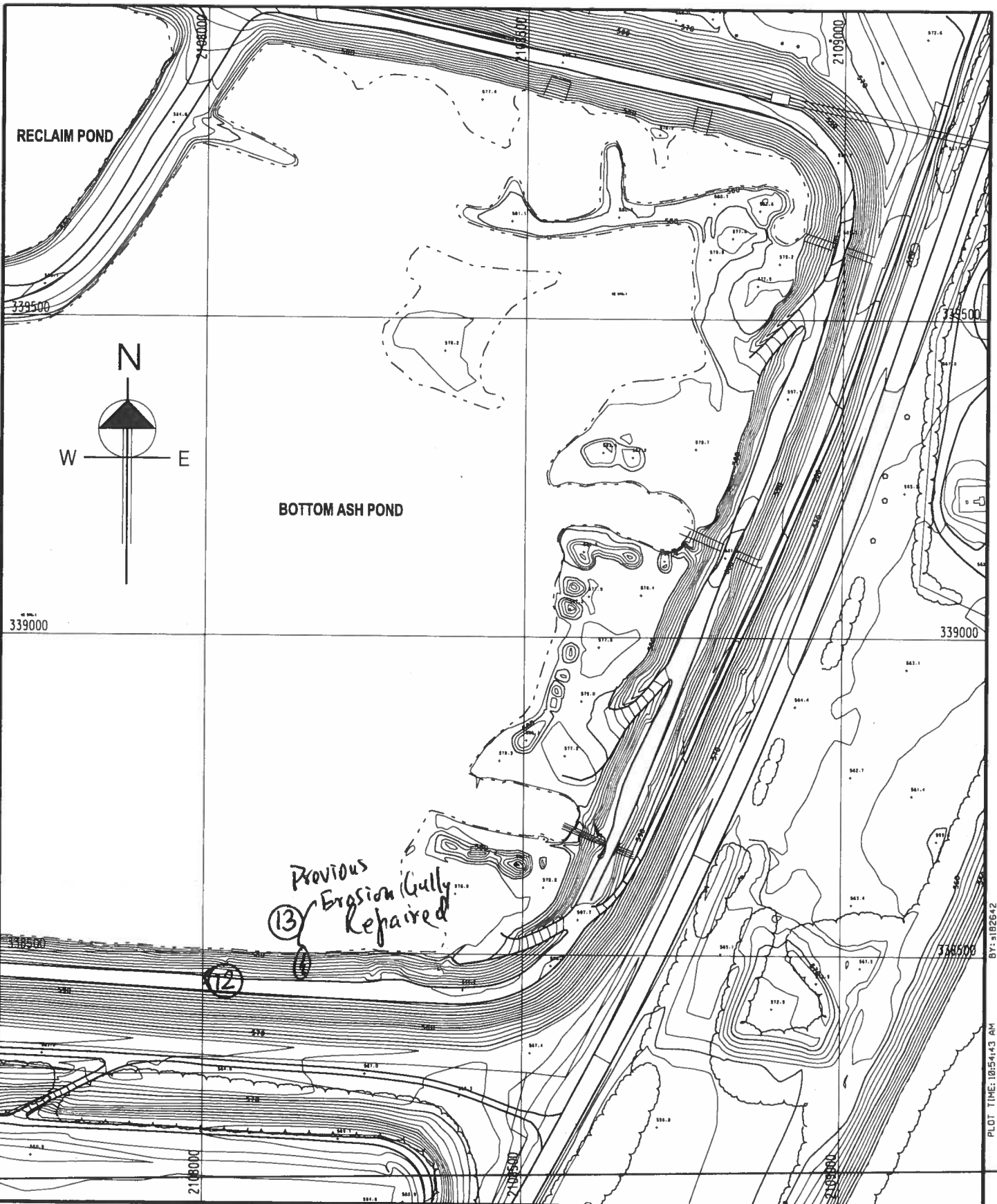


AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

SCALE: 1"=200'

BOTTOM ASH COMPLEX

BY: 8182642 PLOT TIME: 11:01:24 AM PLOT DATE: 10/14/2011



DRN BY:

DATE:

SCALE: 1"=200'

GAVIN POWER STATION

SOUTH DIKE

BOTTOM ASH COMPLEX

DWG NO: **FIGURE 4B**

AEP AMERICAN ELECTRIC POWER

AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

PLOT TIME: 10:54:43 AM
BY: 3102642

2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (South Dike)

Photo # 9

View of the downstream slope and crest (looking west).



Photo # 10

Another view of the downstream slope (looking east).



Photo # 11

The area around the culvert at the toe of the slope in good condition.



2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (South Dike)

Photo # 12

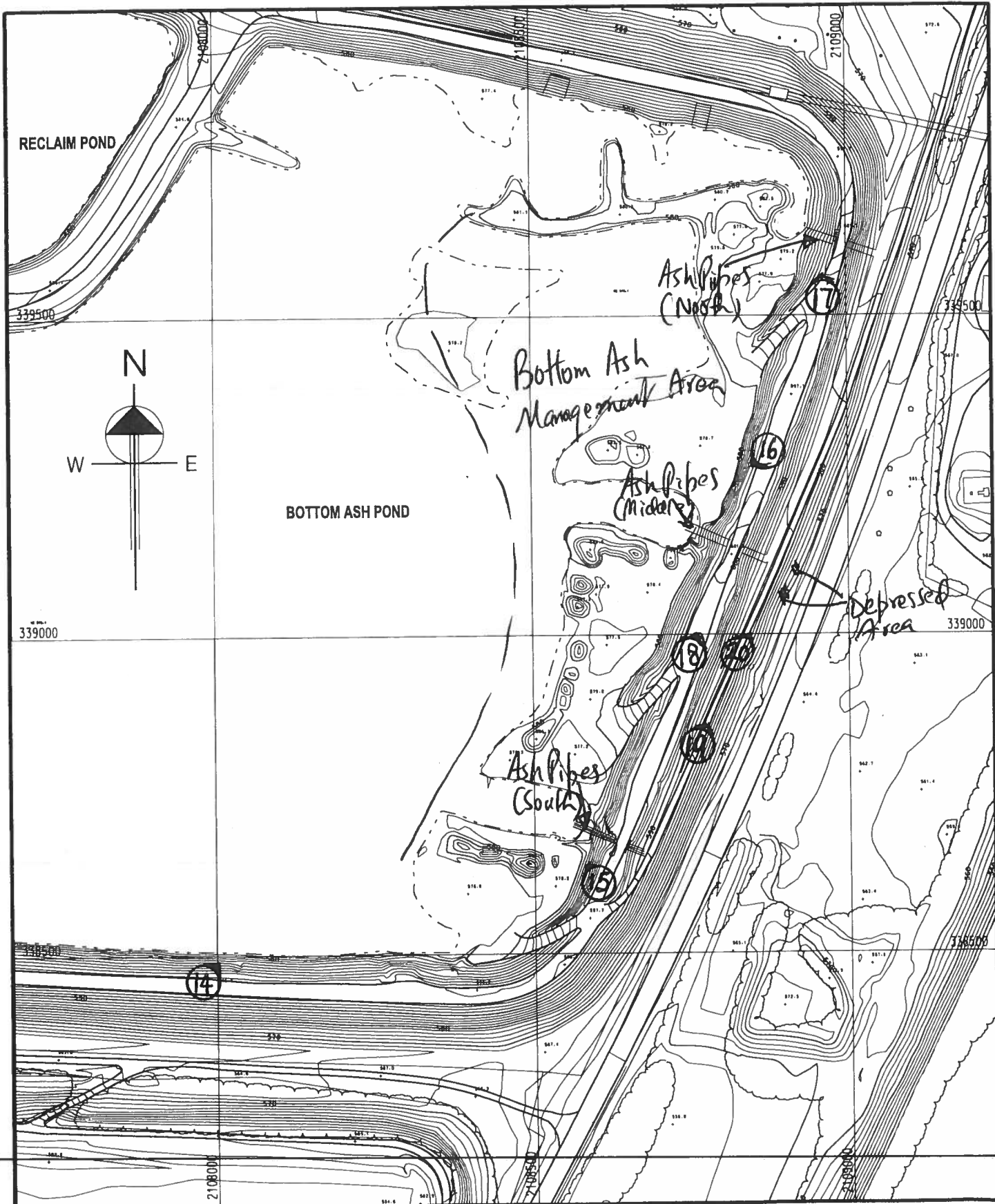
Upstream slope of the dike (looking west) appeared in good and stable condition with controlled vegetation.



Photo # 13

Typical view of erosion gully repaired.





DRN BY:

GAVIN POWER STATION

DWG NO: **FIGURE 5**

DATE:

EAST DIKE



AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

SCALE: 1"=200'

BOTTOM ASH COMPLEX

PLOT TIME: 10:54:43 AM BY: s182642

**2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (East Dike)**

Photo # 14

Bottom ash management area.



Photo # 15

Ash sluice pipes and support structure (south).



Photo # 16

Ash sluice pipes and support structure (middle).



**2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (East Dike)**

Photo # 17

Ash sluice pipes and support structure (north).

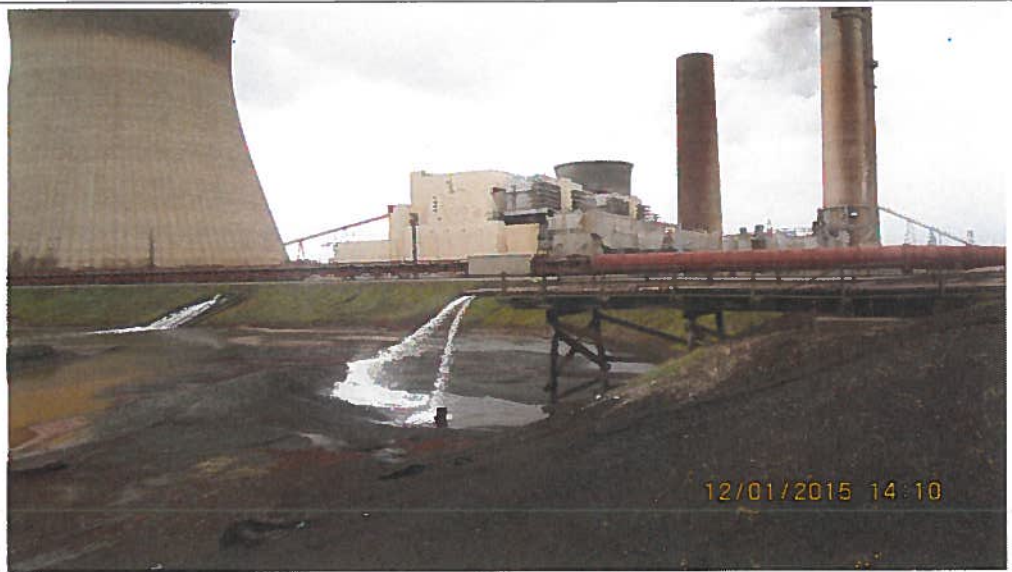


Photo # 18

Typical view east dike crest (looking north).



Photo # 19

Downstream slope, sluice pipes and intermediate bench.

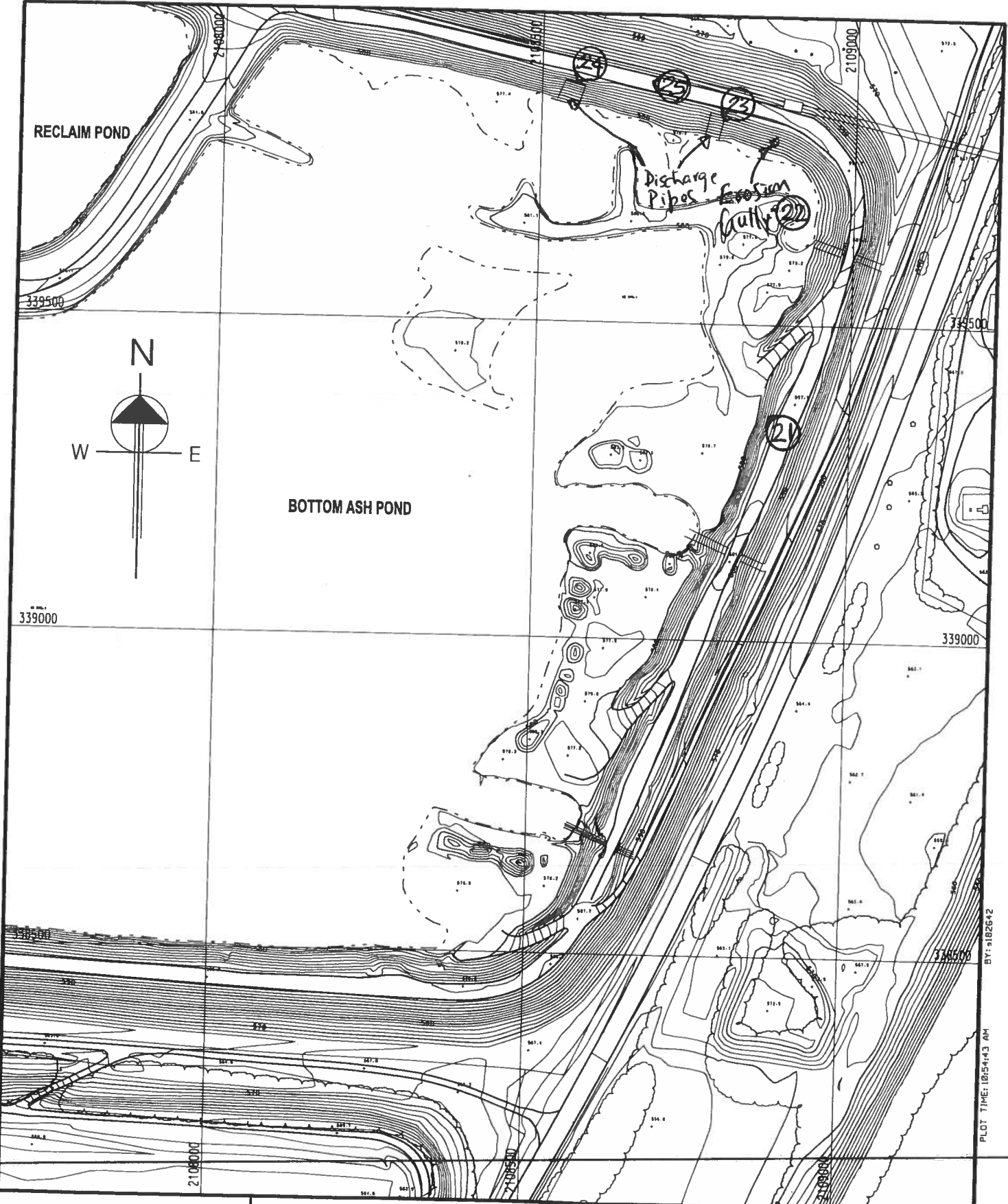


2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (East Dike)

Photo # 20

Downstream slope
(looking north).





DRN BY:

DATE:

SCALE: 1"=200'

GAVIN POWER STATION

NORTH DIKE

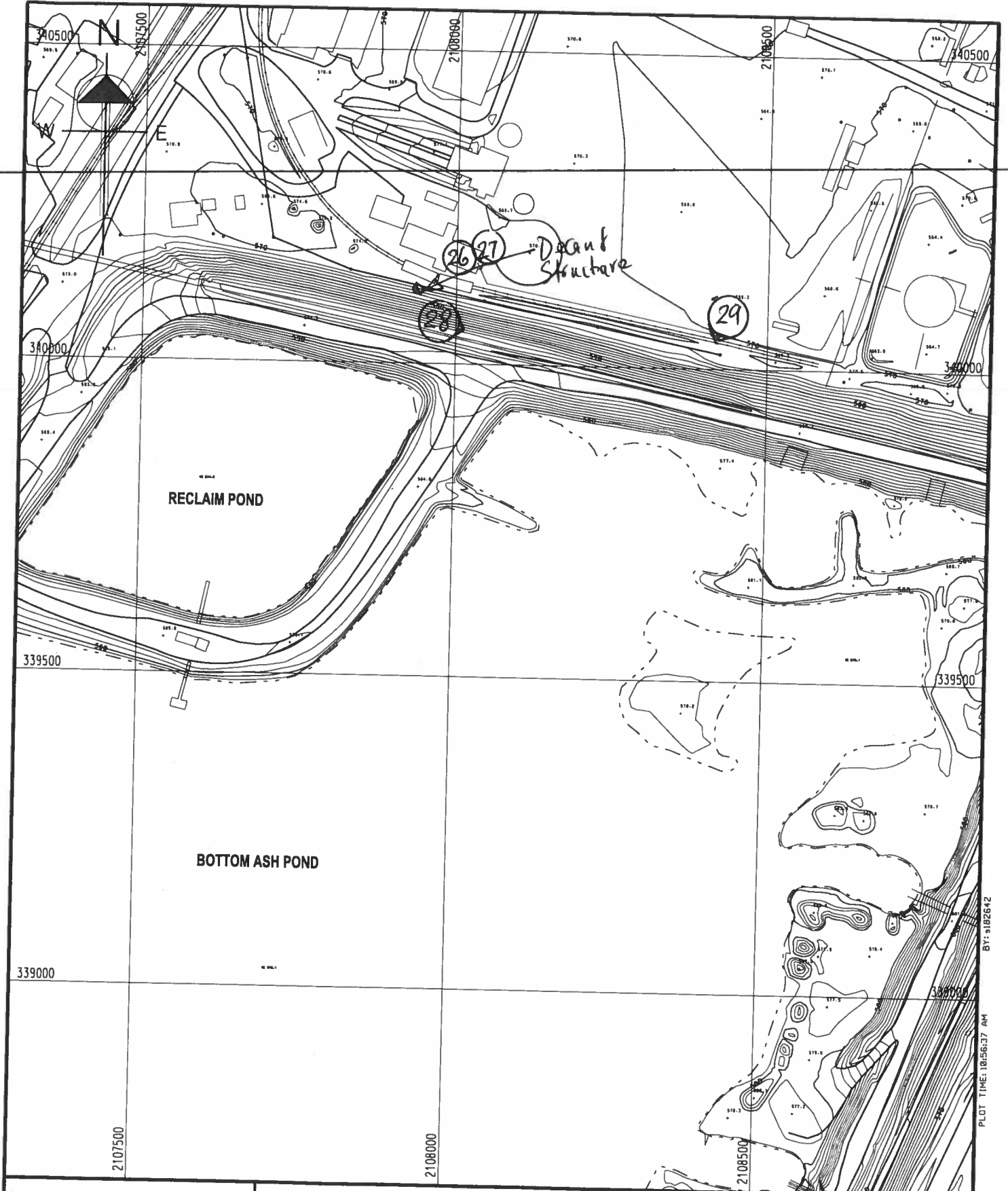
BOTTOM ASH COMPLEX


DWG NO: **FIGURE 6A**

AEP AMERICAN ELECTRIC POWER

AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

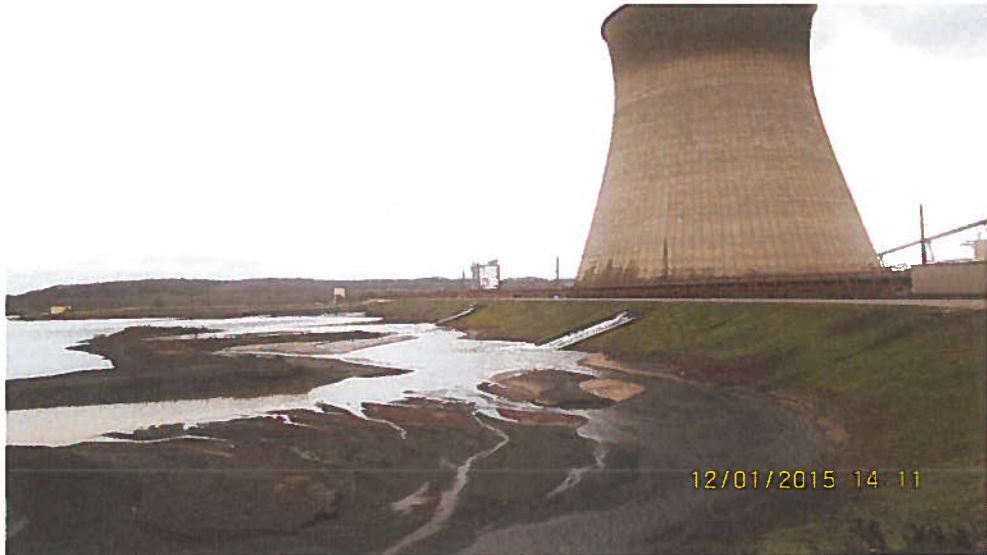


PLOT TIME: 10:54:43 AM
BY: 182642



DRN BY:	GAVIN POWER STATION	DWG NO: FIGURE 6B
DATE:	NORTH DIKE	 AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215
SCALE: 1"=200'	BOTTOM ASH COMPLEX	

PLOT TIME: 10:56:37 AM
 BY: 9182642

2015 Annual Dam and Dike Inspection
Gavin Plant – Stingy Run Flyash Dam

<p><u>Photo # 21</u></p> <p>Overall view of the north dike.</p>	 <p>12/01/2015 14:11</p>
<p><u>Photo # 22</u></p> <p>Erosion gully.</p>	 <p>12/01/2015 14:13</p>
<p><u>Photo # 23</u></p> <p>Discharge pipes (east).</p>	 <p>Liner seam possible split</p> <p>12/01/2015 14:15</p>

2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (North Dike)

Photo # 24

Discharge pipes
(middle).



Photo # 25

An overall view
of the crest of the
dike (looking
east).



Photo # 26

The decant
structure is
illustrated in this
photograph.



2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (North Dike)

Photo # 27

Interior of the decant structure.



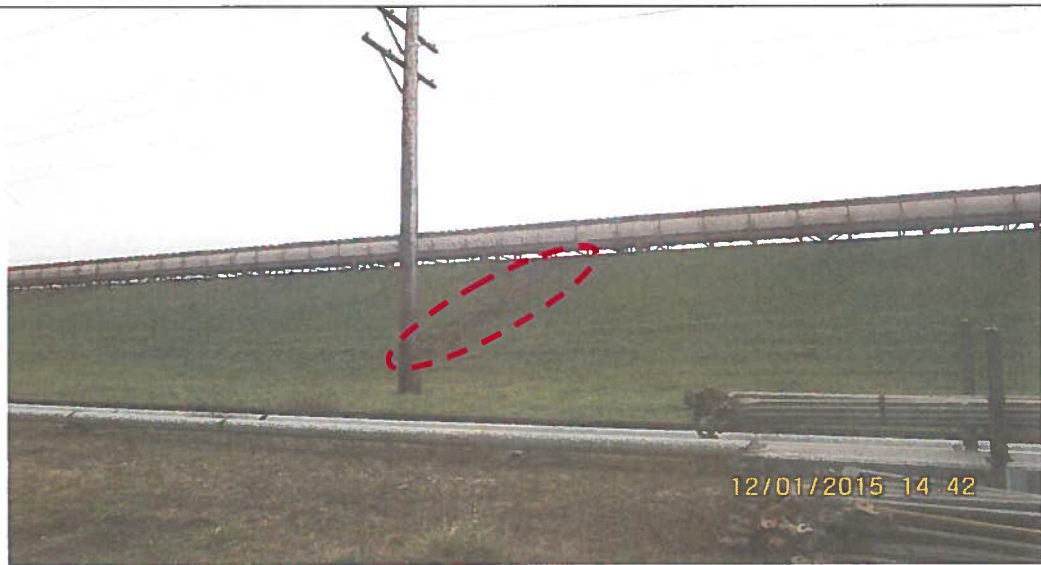
Photo # 28

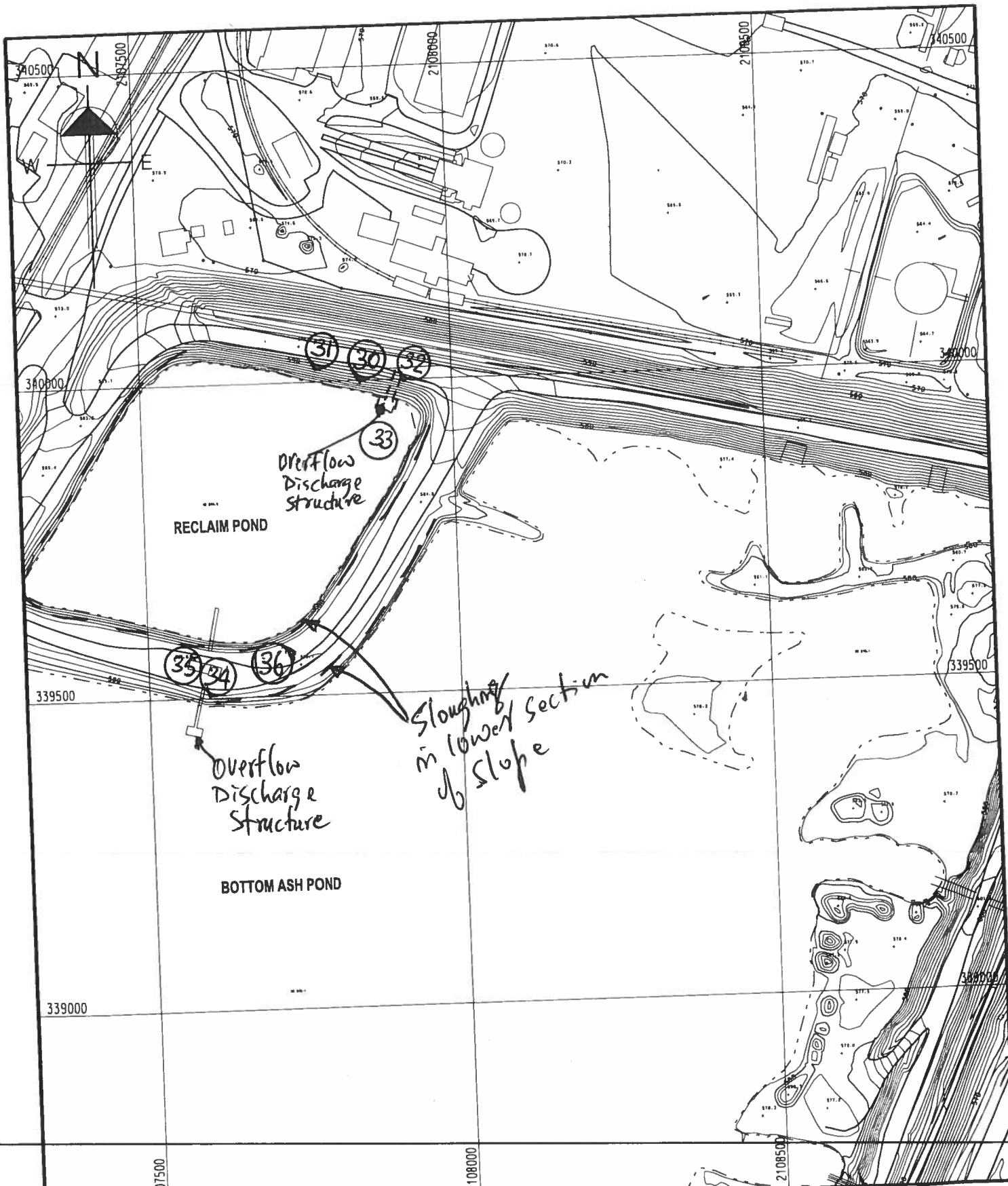
Downstream slope of the dike. The slope appeared in good condition (looking east).



Photo # 29

Typical erosion.





DRN BY:
 DATE:
 SCALE: 1"=200'

GAVIN POWER STATION
RECLAIM POND
 BOTTOM ASH COMPLEX

DWG NO: **FIGURE 7**

AEP SERVICE CORP.
 1 RIVERSIDE PLAZA
 COLUMBUS, OH 43215

PLOT DATE: 10/14/2011
 BY: s182642

**2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (Reclaim Pond)**

Photo # 30

Sloughing along the interior slope shown by dotted line.



Photo # 31

Another view of sloughing at the interior slope.

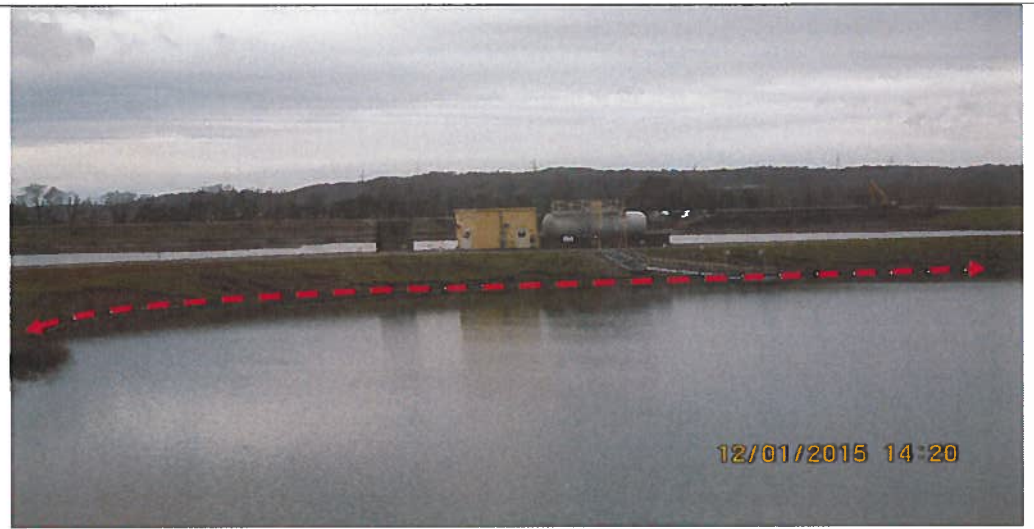


Photo # 32

An overall view of the overflow discharge structure.



2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (Reclaim Pond)

Photo # 33

Interior of the discharge structure pipe.



Photo # 34

An overall view of the overflow discharge structure.



Photo # 35

Interior of the overflow discharge structure.

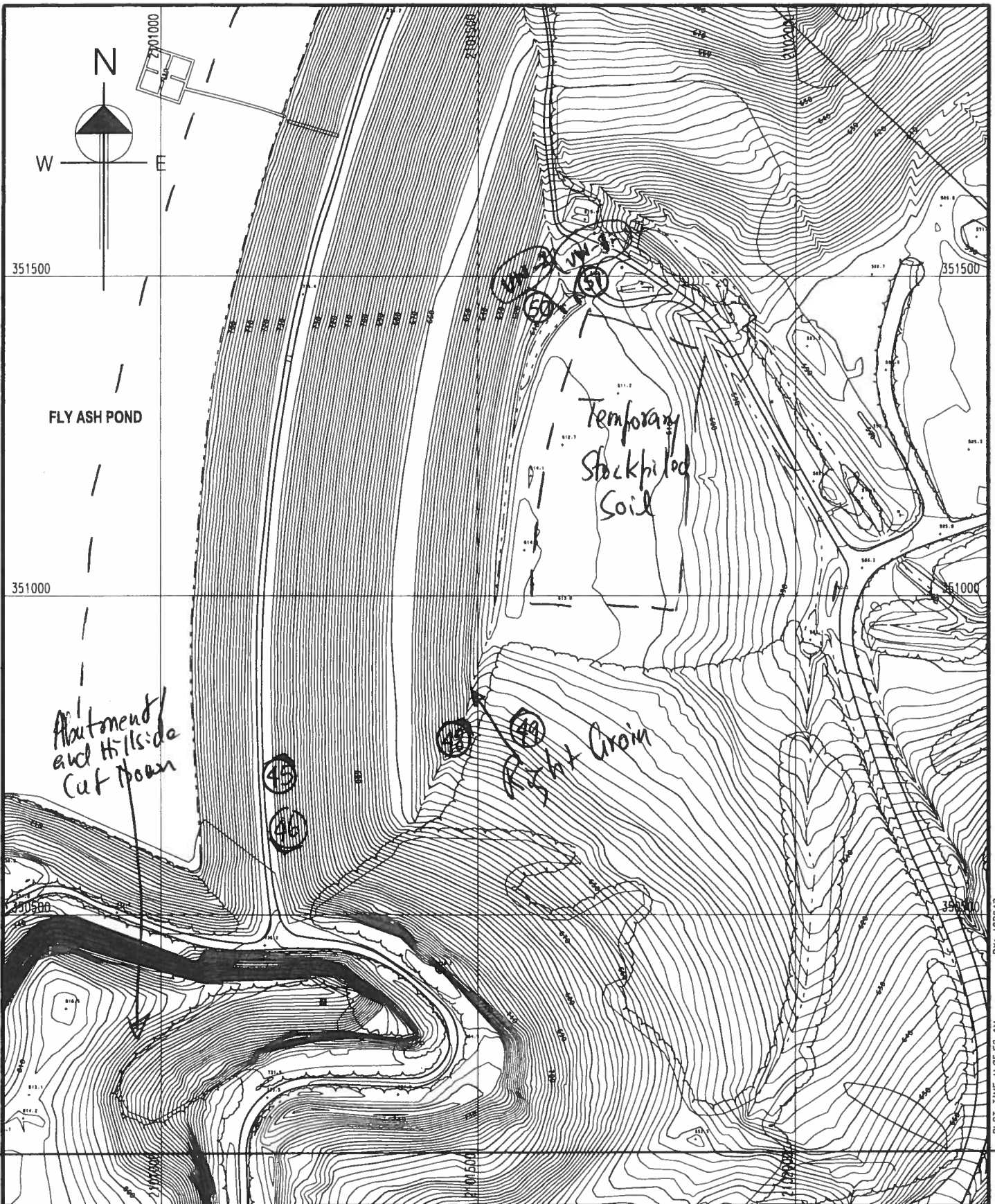


**2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (Reclaim Pond)**

Photo # 36

Typical condition of the
crest of the Reclaim Pond





BY: 102642

PLOT TIME: 11/05/02 AM

PLOT DATE: 10/14/2011

DRN BY:

GAVIN POWER STATION

DWG NO: **FIGURE 8A**

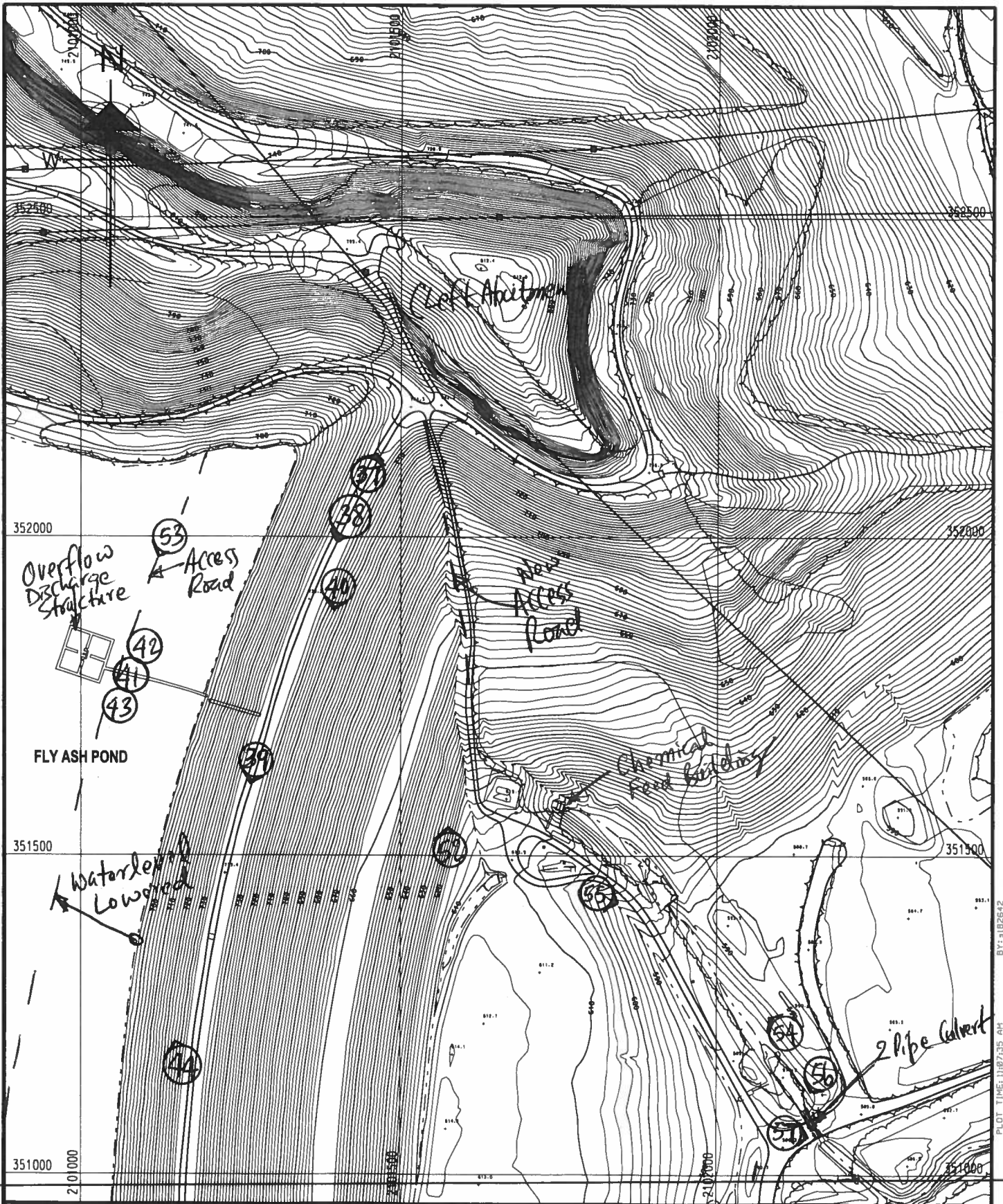
DATE:

SCALE: 1"=200'

STINGY RUN FLYASH DAM



AEP SERVICE CORP.
 1 RIVERSIDE PLAZA
 COLUMBUS, OH 43215



DRN BY:	GAVIN POWER STATION	DWG NO: FIGURE 8B
DATE:		AMERICAN ELECTRIC POWER
SCALE: 1"=200'	STINGY RUN FLYASH DAM	

PLOT DATE: 10/14/2011
 PLOT TIME: 11:07:35 AM
 BY: 1102642

**2015 Annual Dam and Dike Inspection
Gavin Plant – Stingy Run Flyash Dam**

Photo # 37

The hillside and the left (north) abutment.



Photo # 38

A view of the crest of the dam (north section).



Photo # 39

Another typical view of the crest.



**2015 Annual Dam and Dike Inspection
Gavin Plant – Stingy Run Flyash Dam**

Photo # 40

The downstream slope
(looking south).



Photo # 41

Close up view of the
overflow discharge
supporting structures.



Photo # 42

This photograph
illustrates the overflow
discharge structure.



Photo # 43

Syphon pipes installed at the overflow structure.



Photo # 44

This photograph illustrates typical condition of the slope and riprap along the upstream slope of the dam (looking north).



Photo # 45

The downstream slope (looking north).



**2015 Annual Dam and Dike Inspection
Gavin Plant – Stingy Run Flyash Dam**

Photo # 46

The right abutment and hillside, and downstream slope.



Photo # 47

The right groin at the downstream slope.



Photo # 48

Right groin at the downstream slope.



2015 Annual Dam and Dike Inspection
Gavin Plant – Stingy Run Flyash Dam

<p><u>Photo # 49</u></p> <p>The downstream slope below the intermediate bench.</p>	
<p><u>Photo # 50</u></p> <p>Seepage control weir VW-2.</p>	
<p><u>Photo # 51</u></p> <p>Seepage control weir VW-1.</p>	

2015 Annual Dam and Dike Inspection
Gavin Plant – Bottom Ash Pond (Reclaim Pond)

Photo # 52

New access road at the left groin, downstream slope.



Photo # 53

New access road at the toe of the dam.



Photo # 54

The channel downstream of the chemical feed building.



2015 Annual Dam and Dike Inspection
Gavin Plant – Stingy Run Flyash Dam

Photo # 55

Another view of the channel downstream of the chemical feed building.

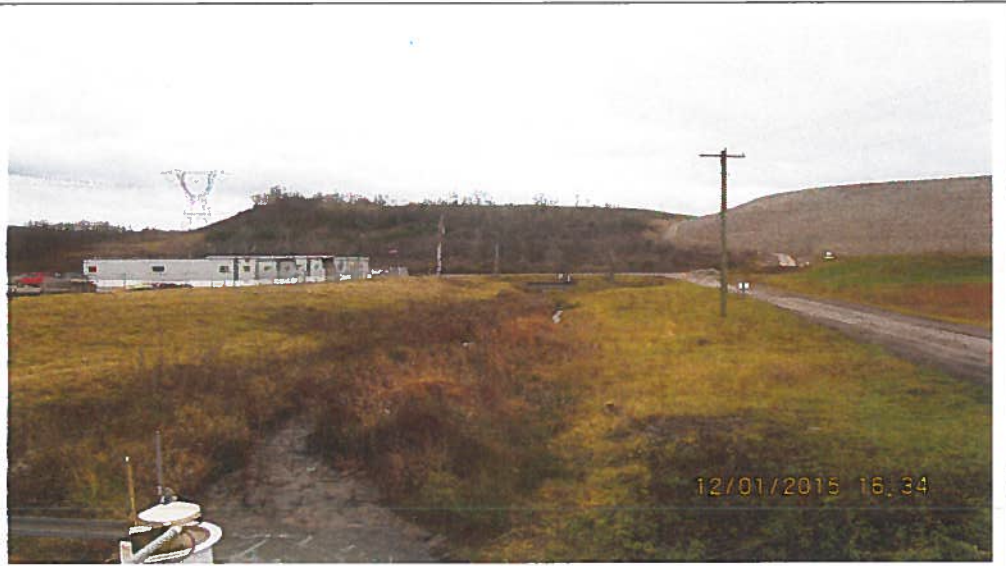


Photo # 56

Pipe culvert inlet end at the Outfall 001.



Photo # 57

Outlet end of the pipe culverts.



APPENDIX C

- Figure 9a – Piezometers Location Map
- Figure 9b – Piezometer Data of the Bottom Ash Pond
- Figure 10a – Observation Wells Location Map
- Figure 10b – Observation Wells Water Elevation
- Figure 11 – Weirs Location Map
- Table 1 – Flow Measurements of Weirs
- Figure 12 – Deformation Monuments Location Map
- Table 2 – Summary of Deformation Data Years 1988-11
- Figure 13 – Slope Inclinerometers Location Map
- Table 3 – Summary of Slope Inclinerometer 1 Monitoring Results
- Table 4 – Summary of Slope Inclinerometer 2 Monitoring Results

Figure 9a – Piezometers Location Map
Gen. James M. Gavin Plant
Bottom Ash Pond Complex

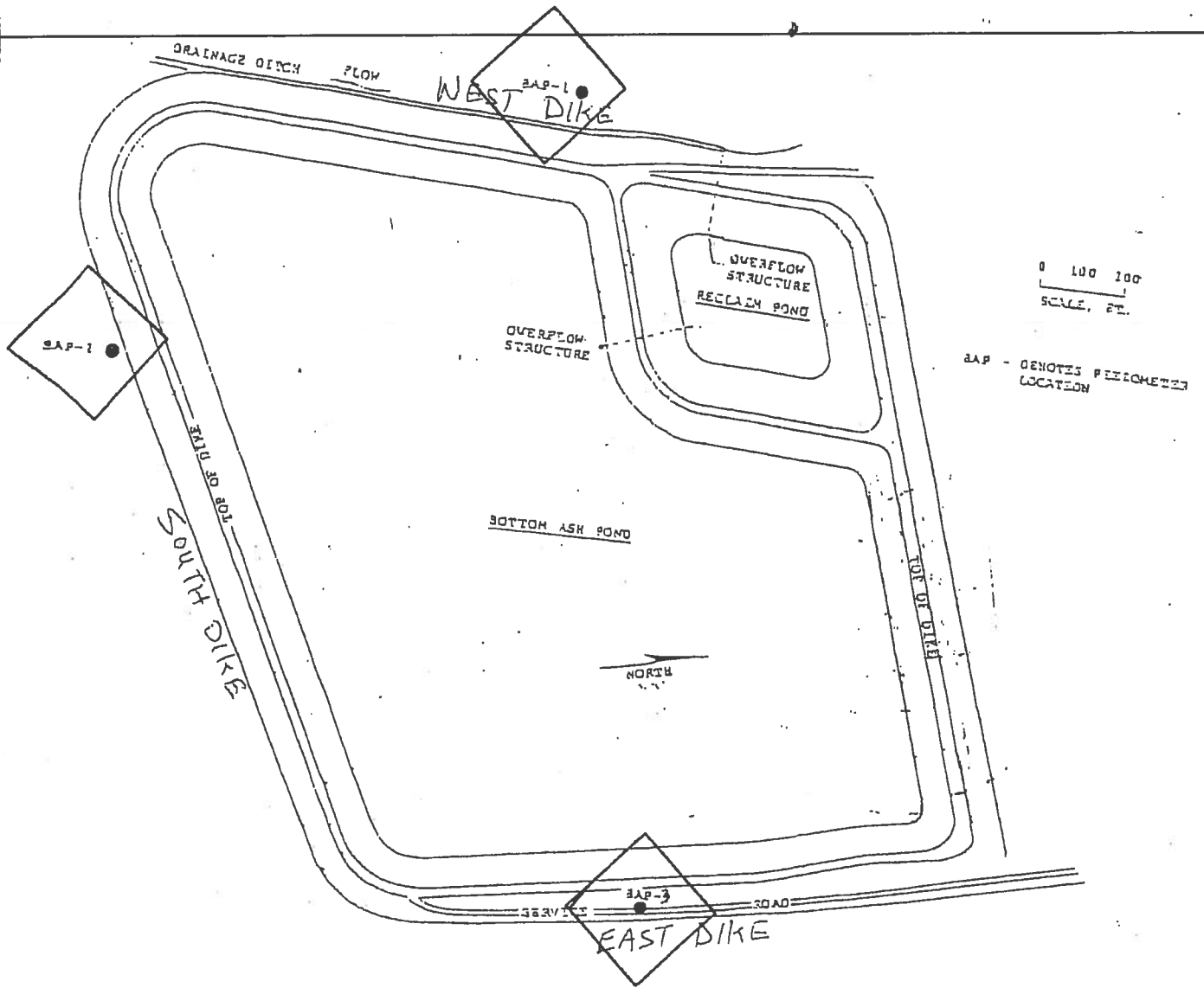


FIGURE 9b - Piezometer Data of the Bottom Ash Pond.

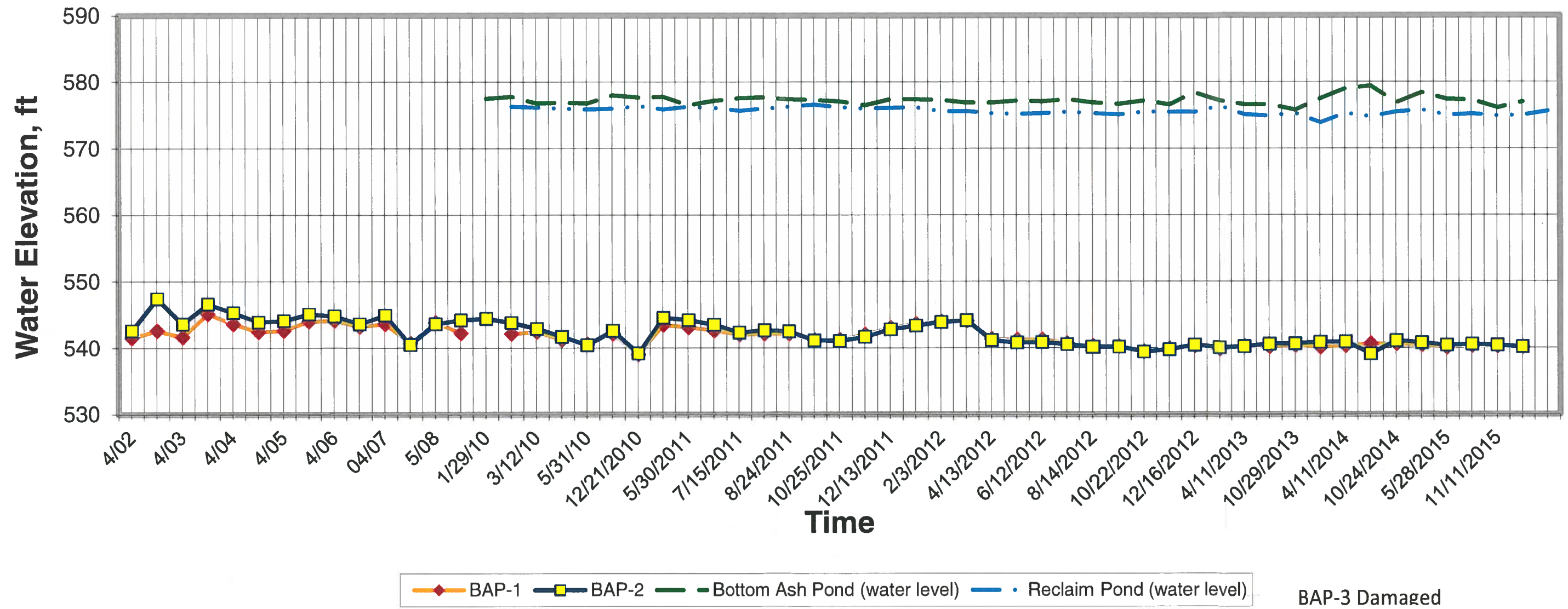


Figure 10a – Observation Wells Location Map
Gen. James M. Gavin Plant
Stingy Run Flyash Dam

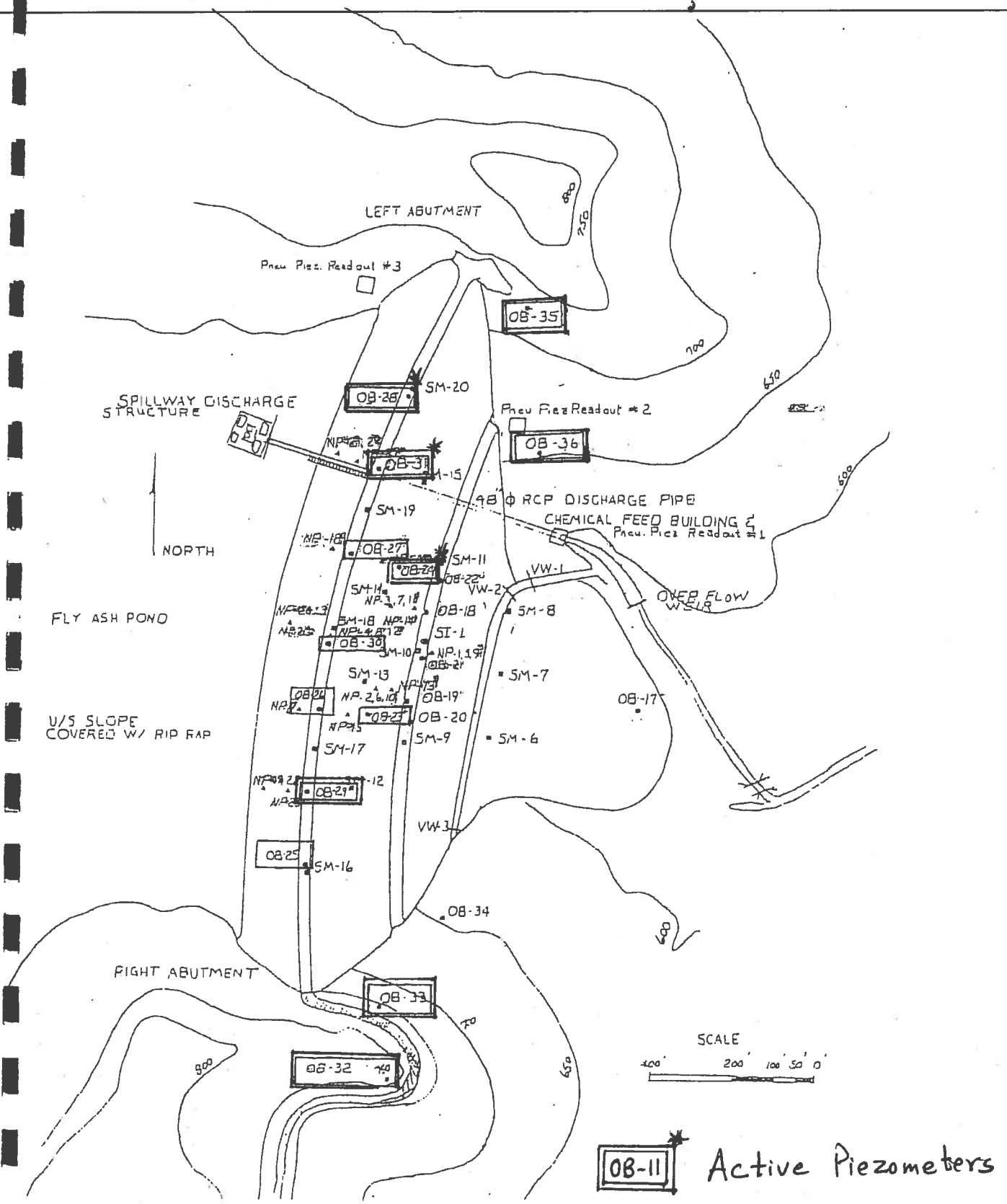


FIGURE 10b - Observation Well Water Elevation.

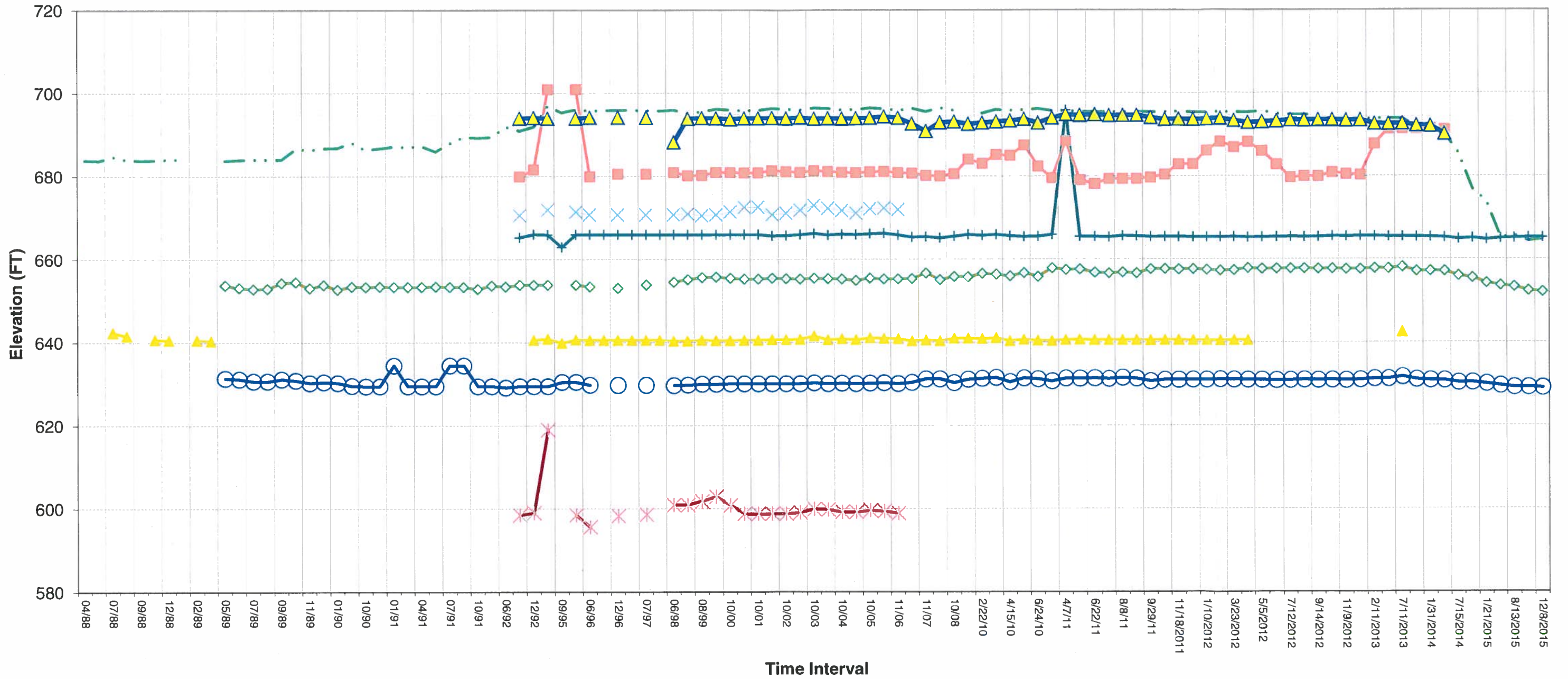
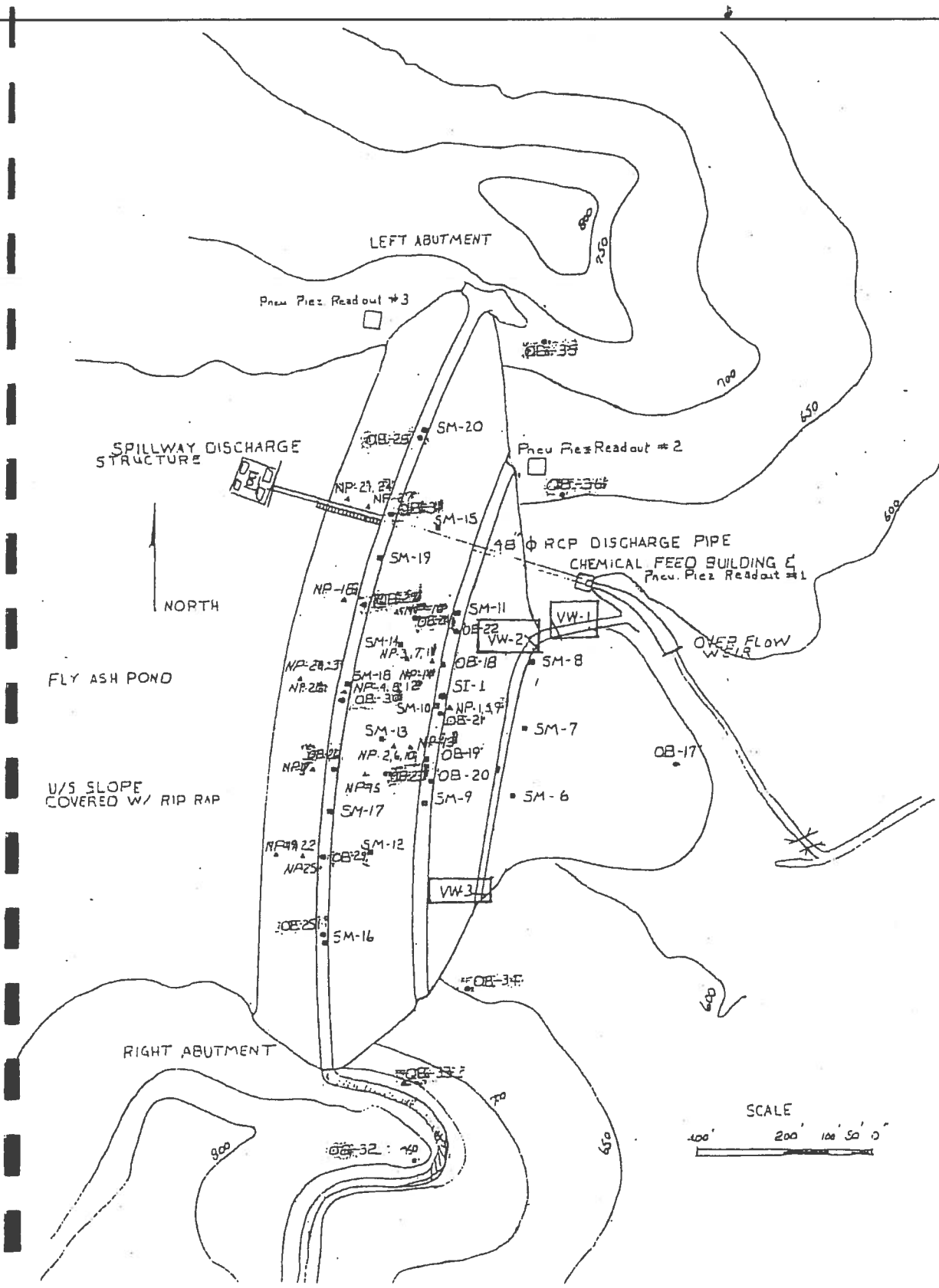


Figure 11 – Weirs Location Map

Gen. James M. Gavin Plant
Stingy Run Flyash Dam



SCALE

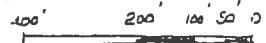


Table 1 – Flow Measurements of Weirs.

Date	Weir					
	VW-1		VW-2		VW-3	
	Head (ft)	Volume (gpm)	Head (ft)	Volume (gpm)	Head (ft)	Volume (gpm)
4/01	0.11	2.06	0.10	1.64	0.06	0.50
10/01	0.11	2.06	0.10	1.64	0.06	0.50
4/02	1.4	1080	1.3	897.98	0.60	131.38
10/02	0.016	0.03	0.015	0.025	0.009	0.01
4/03	0.041	0.208	0.035	0.147	0.02	0.045
10/03	0.051	0.341	0.044	0.244	0.024	0.065
4/04	0.0425	0.226	0.033	0.129	0.018	0.036
10/04	0.02	0.045	0.015	0.025	0.006	0.005
4/05	0.20	8.77	0.18	6.78	0.10	1.64
10/05	0.40	48.16	0.33	29.96	0.18	6.788
4/06	0.80	268.34	0.50	83.63	0.20	8.77
11/06	0.25	15.14	0.19	7.74	0.10	1.64
4/07	0.30	23.7	0.25	15.14	0.19	7.74
11/07	0.03	0.105	0.03	0.105	0.02	0.045
5/08	0.07	0.709	0.07	0.709	0.05	0.32
10/08	0.18	6.788	0.16	5.09	0.09	1.28
1/10	See Note 1					
2/10	0.10	1.64	0.07	0.709	0.05	0.32
3/10	0.11	2.06	0.08	0.97	0.06	0.50
4/10	0.05	0.32	0.04	0.197	0.02	0.045
5/10	0.09	1.28	0.07	0.709	0.05	0.32
6/10	0.20	8.77	0.15	4.36	0.12	2.54
12/10	See Note 1					
4/11	0.18	6.78	0.16	5.09	0.11	2.06
5/11	0.14	3.69	0.12	2.54	0.08	0.97
6/11	0.14	3.69	0.11	2.06	0.07	0.709
7/11	0.17	5.9	0.13	3.08	0.10	1.646
8/8/11	0.20	8.77	0.16	5.09	0.13	3.08
8/24/11	0.15	4.36	0.11	2.06	0.08	0.97
9/11	0.12	2.54	0.08	0.97	0.06	0.495
10/11	0.15	4.36	0.13	3.08	0.09	1.28
11/11	0.15	4.00	0.13	2.80	0.10	1.5
12/11	0.09	1.13	0.08	0.84	0.06	0.41
1/12	0.08	0.84	0.07	0.60	0.05	0.26
2/12	0.10	1.47	0.08	0.84	0.07	0.60
3/12	0.08	0.84	0.06	0.41	0.04	0.15
4/12	0.07	0.60	0.05	0.26	0.03	0.07
5/12	0.16	4.76	0.14	3.41	0.10	1.47
6/12	0.07	0.60	0.06	0.41	0.03	0.07
7/12	0.07	0.60	0.05	0.26	0.03	0.07
8/12	0.09	1.13	0.07	0.60	0.05	0.26
9/12	0.09	1.13	0.06	0.41	0.04	0.15
10/12	0.08	0.84	0.06	0.41	0.05	0.26
11/12	0.08	0.84	0.06	0.41	0.05	0.26
12/12	0.10	1.47	0.08	0.84	0.07	0.60

(a) Note 1 – No reading due to ice.

(b) The high discharge volume of 4/02 at all the weirs is attributed to heavy rainfall in that timeframe.

Date	Weir					
	VW-1		VW-2		VW-3	
	Head (ft)	Volume (gpm)	Head (ft)	Volume (gpm)	Head (ft)	Volume (gpm)
2/13	0.09	1.12	0.08	0.84	0.06	0.41
4/13	0.05	0.26	0.04	0.15	0.03	0.07
7/13	0.21	9.3	0.2	8.3	0.17	5.5
10/13	0.08	0.84	0.05	0.26	0.03	0.07
1/14	0.09	1.13	0.06	0.41	0.04	0.15
4/14	0.08	0.84	0.05	0.26	0.03	0.07
7/14	0.12	2.32	0.10	1.47	0.08	0.84
10/24/14	0.11	1.86	0.09	1.13	0.08	0.84
1/21/15	0.09	1.13	0.07	0.60	0.06	0.41
5/28/15	0.09	1.13	0.08	0.84	0.06	0.41
8/13/15	0.15	4.0	0.12	2.30	0.10	1.50
11/11/15	0.11	1.9	0.08	0.80	0.06	0.40
12/9/15	0.12	2.3	0.10	1.50	0.09	1.10

Figure 12 – Deformation Monuments Location Map
Gen. James M. Gavin Plant
Stingy Run Flyash Dam

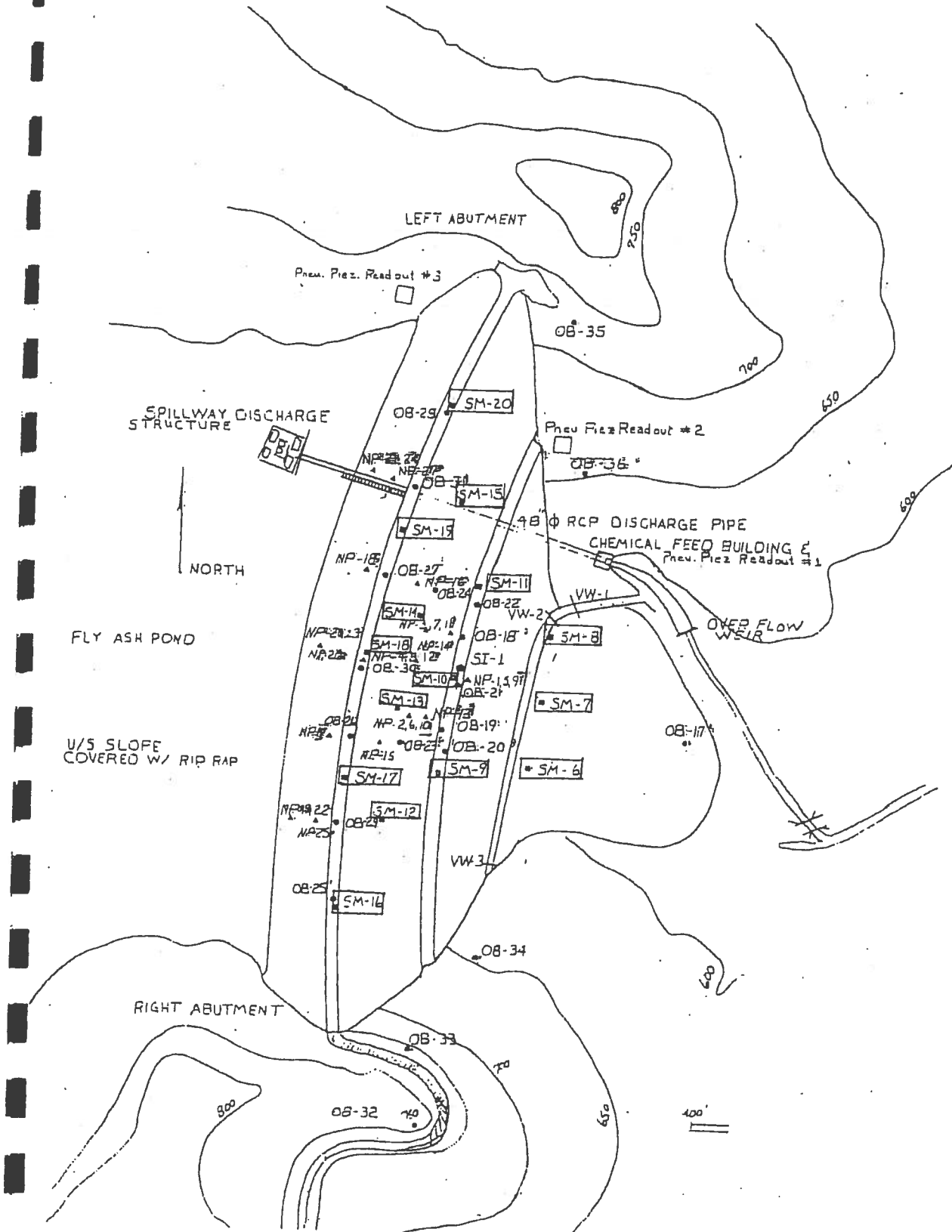


Table 2 - Summary of Deformation Data for Years 1988- Nov, 2015

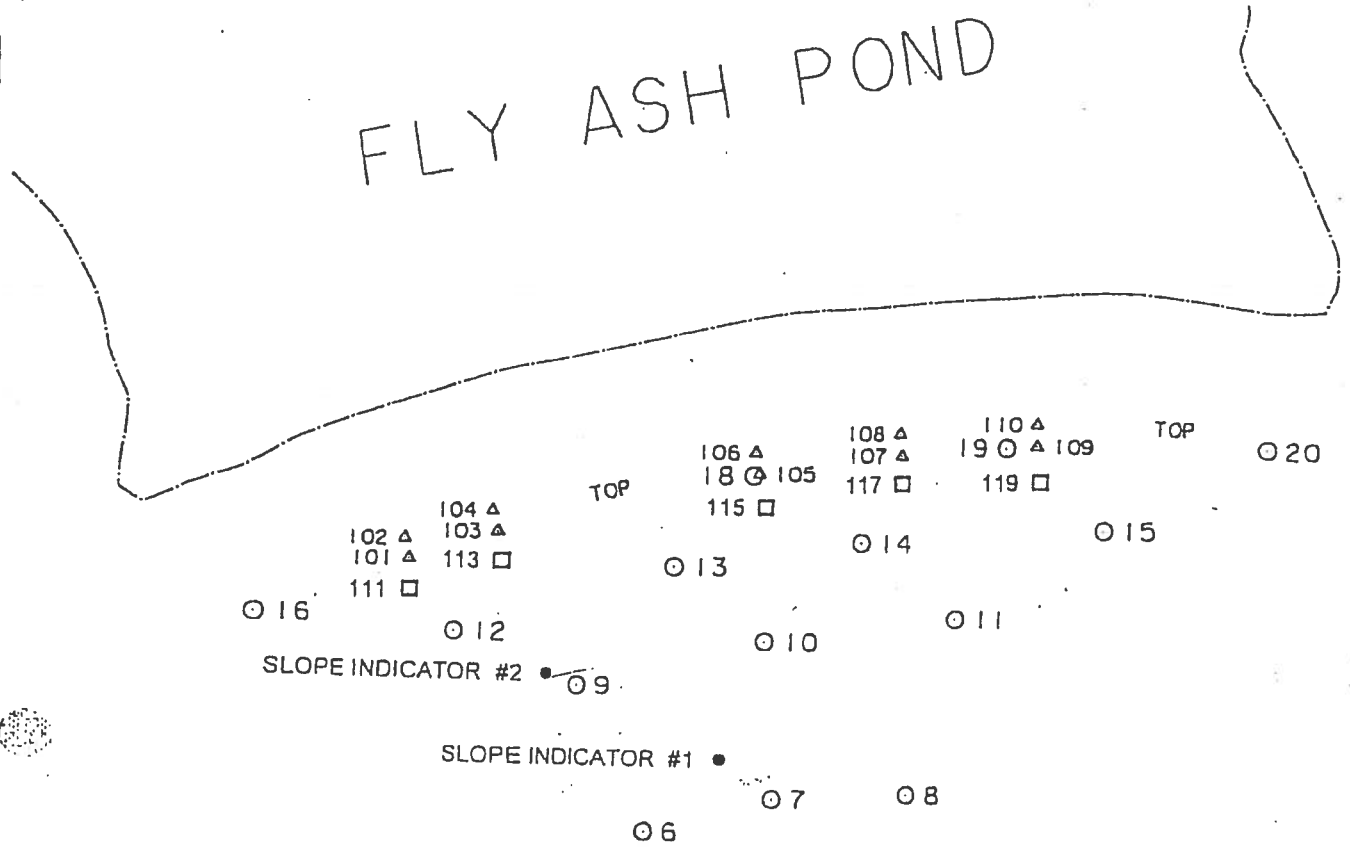
Location	ID	Horizontal Deformation (inch)				Vertical Deformation (inch)	
		N/S	E/W	Rate/year		Total	Rate/year
				N/S	E/W		
Toe of Dam	SM-6	0.276	-2.30	0.01	-0.08	0.94	0.03
Toe of Dam	SM-7	1.068	-3.43	0.04	-0.12	0.52	0.02
Toe of Dam	SM-8	2.07	-2.16	0.07	-0.08	0.09	0.0003
Lower Bench	SM-9	-0.36	2.25	0.01	0.08	6.36	0.23
Lower Bench	SM-10	0.08	2.26	0.002	0.08	5.04	0.18
Lower Bench	SM-11	-1.12	1.48	-0.04	0.05	4.30	0.16
Face of Dam	SM-12	1.11	5.24	0.04	0.19	7.53	0.27
Face of Dam	SM-13	-1.86	5.97	-0.06	0.22	8.18	0.30
Face of Dam	SM-14	Monument Damaged					
Face of Dam	SM-15	-3.27	2.70	-0.12	0.10	3.20	0.11
Crest	SM-16	1.09	3.10	0.04	0.11	3.75	0.13
Crest	SM-17	Monument Damaged					
Crest	SM-18	-1.92	7.22	-0.07	0.26	9.37	0.34
Crest	SM-19	Monument Damaged					
Crest	SM-20	-2.55	2.86	-0.09	0.11	4.40	0.16

Horizontal Deformation:

- South/West direction

+ North/East direction

Figure 13 – Slope Inclinometers Location Map
Gen. James M. Gavin Plant
Stingy Run Flyash Dam



GAVIN PLANT
FLY ASH DAM
DEFORMATION MONUMENTATION
MAIN DAM

Summary of Slope Indicator 1 Monitoring Results
For Period 9/1988 (Initial) and Year Ending 6/2012

Depth (feet)	Elevation (feet)	Resultant Movement (inch)		Difference (inch)
		Sept, 1988	June, 2012	
3	658.7	2.896	5.9022	3.01
5	656.7	3.316	6.2696	2.95
7	654.7	3.175	6.0928	2.92
9	652.7	2.973	6.0658	3.09
11	650.7	2.945	6.1553	3.21
13	648.7	2.972	6.0856	3.11
15	646.7	2.992	5.9180	2.93
17	644.7	3.011	5.7811	2.77
19	642.7	3.034	5.7820	2.75
21	640.7	3.055	5.8314	2.78
23	638.7	3.078	5.7457	2.67
25	636.7	3.099	5.8041	2.71
27	634.7	3.121	5.8498	2.73
29	632.7	3.141	5.8968	2.76
31	630.7	3.162	5.9437	2.78
33	628.7	3.173	5.9744	2.80
35	626.7	3.172	5.9686	2.80
37	624.7	3.16	5.9354	2.78
39	622.7	3.098	5.8009	2.70
41	620.7	3.053	5.6352	2.58
43	618.7	3.001	5.4811	2.48
45	616.7	2.968	5.3000	2.33
47	614.7	2.936	5.1530	2.22
49	612.7	2.886	4.9630	2.08
51	610.7	2.841	4.8369	2.00
53	608.7	2.8	4.7397	1.94
55	606.7	2.774	4.6931	1.92
57	604.7	2.761	4.6648	1.90
59	602.7	2.742	4.6336	1.89
61	600.7	2.71	4.5782	1.87
63	598.7	2.681	4.5173	1.84
65	596.7	2.653	4.4557	1.80
67	594.7	2.637	4.4284	1.79
69	592.7	2.591	4.3528	1.76
71	590.7	2.554	4.2896	1.74
73	588.7	2.543	4.2624	1.72
75	586.7	2.525	4.2284	1.70
77	584.7	2.513	4.2031	1.69
79	582.7	2.485	4.1487	1.66
81	580.7	2.427	4.0290	1.60
83	578.7	2.321	3.8498	1.53
85	576.7	2.205	3.6604	1.46
87	574.7	2.115	3.4912	1.38
89	572.7	1.992	3.2605	1.27
91	570.7	1.867	3.0400	1.17
93	568.7	1.772	2.8504	1.08
95	566.7	1.623	2.6021	0.98
97	564.7	1.38	2.2040	0.82
99	562.7	1.255	1.9738	0.72
101	560.7	1.013	1.5887	0.58
103	558.7	0.871	1.3520	0.48
105	556.7	0.779	1.2005	0.42
107	554.7	0.638	0.9594	0.32
109	552.7	0.5	0.7436	0.24
111	550.7	0.398	0.5867	0.19
113	548.7	0.322	0.4598	0.14
115	546.7	0.194	0.2610	0.07
117	544.7	0.109	0.1407	0.03
119	542.7	0.087	0.0811	-0.01

AEP Profile Change

GVdam SI-1 A					
Depth in Feet;	Profile Change: Profile Change in Inches				
Depth	12/7/2011	11/13/2013	5/19/2014	12/4/2014	5/19/2015
3.0	0.0000	0.0222	0.1314	0.0504	0.1290
5.0	0.0000	0.0168	0.1200	0.0384	0.1398
7.0	0.0000	0.0132	0.1110	0.0306	0.1674
9.0	0.0000	0.0222	0.1194	0.0456	0.1356
11.0	0.0000	0.0210	0.1098	0.0402	0.1404
13.0	0.0000	0.0222	0.1116	0.0414	0.1554
15.0	0.0000	0.0294	0.1254	0.0534	0.1662
17.0	0.0000	0.0282	0.1140	0.0474	0.1416
19.0	0.0000	0.0282	0.1122	0.0480	0.1344
21.0	0.0000	0.0306	0.1122	0.0516	0.1128
23.0	0.0000	0.0264	0.1074	0.0432	0.1332
25.0	0.0000	0.0276	0.1068	0.0444	0.1260
27.0	0.0000	0.0276	0.1068	0.0462	0.1176
29.0	0.0000	0.0288	0.1068	0.0474	0.1206
31.0	0.0000	0.0306	0.1080	0.0498	0.1212
33.0	0.0000	0.0324	0.1098	0.0540	0.1146
35.0	0.0000	0.0330	0.1110	0.0516	0.1290
37.0	0.0000	0.0336	0.1110	0.0522	0.1308
39.0	0.0000	0.0348	0.1104	0.0528	0.1296
41.0	0.0000	0.0306	0.1044	0.0474	0.1272
43.0	0.0000	0.0294	0.1002	0.0468	0.1098
45.0	0.0000	0.0264	0.0960	0.0438	0.1080
47.0	0.0000	0.0204	0.0882	0.0348	0.1074
49.0	0.0000	0.0150	0.0798	0.0258	0.1026
51.0	0.0000	0.0126	0.0738	0.0258	0.0804
53.0	0.0000	0.0102	0.0690	0.0216	0.0726
55.0	0.0000	0.0102	0.0672	0.0216	0.0654
57.0	0.0000	0.0102	0.0654	0.0210	0.0648
59.0	0.0000	0.0102	0.0648	0.0210	0.0624
61.0	0.0000	0.0078	0.0630	0.0168	0.0648
63.0	0.0000	0.0072	0.0612	0.0150	0.0630
65.0	0.0000	0.0060	0.0594	0.0138	0.0588
67.0	0.0000	0.0054	0.0588	0.0132	0.0594
69.0	0.0000	0.0054	0.0564	0.0120	0.0612
71.0	0.0000	0.0048	0.0552	0.0108	0.0648
73.0	0.0000	0.0048	0.0552	0.0102	0.0666
75.0	0.0000	0.0054	0.0540	0.0102	0.0630
77.0	0.0000	0.0054	0.0522	0.0096	0.0618
79.0	0.0000	0.0066	0.0504	0.0078	0.0468
81.0	0.0000	0.0048	0.0468	0.0030	0.0450
83.0	0.0000	0.0048	0.0450	0.0012	0.0432
85.0	0.0000	0.0012	0.0426	-0.0036	0.0552
87.0	0.0000	0.0024	0.0426	-0.0024	0.0510
89.0	0.0000	0.0024	0.0408	-0.0030	0.0468
91.0	0.0000	0.0030	0.0378	-0.0030	0.0354
93.0	0.0000	0.0000	0.0354	-0.0060	0.0504

AEP Profile_Change

GVdam SI-1 A					
Depth in Feet;	Profile_Change: Profile Change in Inches				
Depth	12/7/2011	11/13/2013	5/19/2014	12/4/2014	5/19/2015
95.0	0.0000	-0.0006	0.0330	-0.0066	0.0438
97.0	0.0000	-0.0018	0.0288	-0.0090	0.0348
99.0	0.0000	-0.0054	0.0246	-0.0132	0.0432
101.0	0.0000	-0.0042	0.0192	-0.0138	0.0348
103.0	0.0000	-0.0036	0.0150	-0.0156	0.0234
105.0	0.0000	-0.0030	0.0150	-0.0150	0.0156
107.0	0.0000	-0.0030	0.0120	-0.0156	0.0102
109.0	0.0000	-0.0030	0.0102	-0.0156	0.0060
111.0	0.0000	-0.0030	0.0084	-0.0150	0.0042
113.0	0.0000	-0.0030	0.0060	-0.0162	0.0072
115.0	0.0000	-0.0030	0.0036	-0.0162	0.0066
117.0	0.0000	-0.0018	0.0042	-0.0138	0.0012
119.0	0.0000	-0.0096	-0.0036	-0.0192	0.0234
121.0	0.0000	0.0000	0.0000	0.0000	0.0000

AEP Profile Change

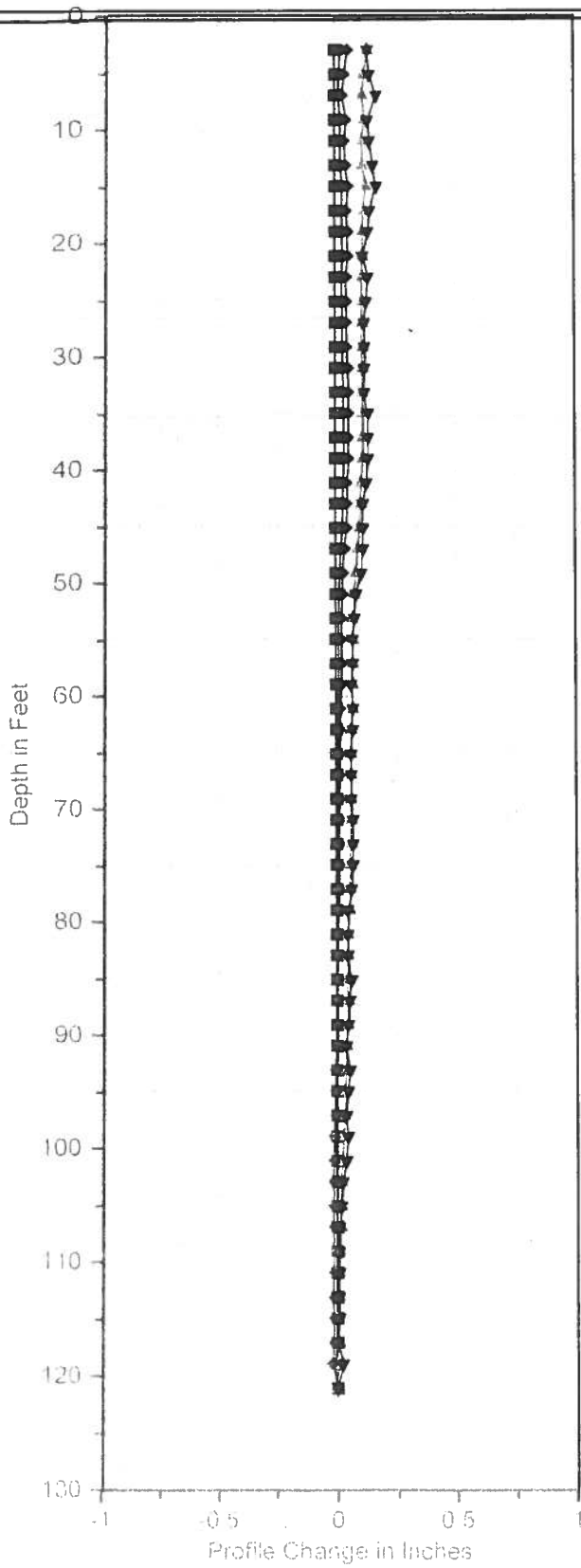
GVdam SI-1 B					
Depth in Feet,	Profile Change. Profile Change in Inches				
Depth	12/7/2011	11/13/2013	5/19/2014	12/4/2014	5/19/2015
3.0	0.0000	-0.0204	0.1092	-0.0198	0.0378
5.0	0.0000	-0.0180	0.1038	-0.0216	0.0258
7.0	0.0000	-0.0174	0.1020	-0.0246	0.0072
9.0	0.0000	-0.0156	0.1068	-0.0150	0.0204
11.0	0.0000	-0.0180	0.1086	-0.0150	0.0528
13.0	0.0000	-0.0144	0.1164	-0.0078	0.0636
15.0	0.0000	-0.0066	0.1062	-0.0126	0.0540
17.0	0.0000	-0.0180	0.0810	-0.0330	0.0174
19.0	0.0000	-0.0186	0.0720	-0.0390	-0.0078
21.0	0.0000	-0.0150	0.0750	-0.0330	-0.0186
23.0	0.0000	-0.0114	0.0696	-0.0342	-0.0252
25.0	0.0000	-0.0168	0.0630	-0.0330	0.0144
27.0	0.0000	-0.0186	0.0630	-0.0228	0.0510
29.0	0.0000	-0.0222	0.0642	-0.0228	0.0576
31.0	0.0000	-0.0234	0.0606	-0.0240	0.0558
33.0	0.0000	-0.0276	0.0576	-0.0282	0.0540
35.0	0.0000	-0.0258	0.0540	-0.0300	0.0468
37.0	0.0000	-0.0228	0.0504	-0.0306	0.0312
39.0	0.0000	-0.0204	0.0552	-0.0222	0.0312
41.0	0.0000	-0.0210	0.0540	-0.0222	0.0366
43.0	0.0000	-0.0192	0.0552	-0.0114	0.0150
45.0	0.0000	-0.0222	0.0486	-0.0210	0.0222
47.0	0.0000	-0.0228	0.0438	-0.0228	0.0096
49.0	0.0000	-0.0240	0.0492	-0.0180	0.0228
51.0	0.0000	-0.0240	0.0432	-0.0234	0.0168
53.0	0.0000	-0.0228	0.0432	-0.0186	0.0078
55.0	0.0000	-0.0210	0.0492	-0.0138	0.0198
57.0	0.0000	-0.0210	0.0492	-0.0132	0.0228
59.0	0.0000	-0.0204	0.0432	-0.0168	0.0114
61.0	0.0000	-0.0222	0.0330	-0.0270	0.0054
63.0	0.0000	-0.0186	0.0414	-0.0174	0.0102
65.0	0.0000	-0.0180	0.0420	-0.0156	0.0162
67.0	0.0000	-0.0186	0.0342	-0.0204	0.0090
69.0	0.0000	-0.0126	0.0348	-0.0162	-0.0054
71.0	0.0000	-0.0102	0.0396	-0.0084	-0.0078
73.0	0.0000	-0.0126	0.0402	-0.0090	0.0114
75.0	0.0000	-0.0120	0.0276	-0.0192	-0.0090
77.0	0.0000	-0.0096	0.0174	-0.0264	-0.0216
79.0	0.0000	-0.0066	0.0174	-0.0264	-0.0348
81.0	0.0000	-0.0048	0.0102	-0.0276	-0.0504
83.0	0.0000	-0.0048	0.0168	-0.0192	-0.0372
85.0	0.0000	-0.0084	0.0162	-0.0168	-0.0156
87.0	0.0000	-0.0060	0.0150	-0.0156	-0.0228
89.0	0.0000	-0.0048	0.0132	-0.0138	-0.0330
91.0	0.0000	-0.0048	0.0198	-0.0078	-0.0294
93.0	0.0000	-0.0060	0.0264	0.0000	-0.0132

AEP Profile_Change

GVdam SI-1 B					
Depth in Feet;	Profile Change: Profile Change in Inches				
Depth	12/7/2011	11/13/2013	5/19/2014	12/4/2014	5/19/2015
95.0	0.0000	-0.0072	0.0162	-0.0054	-0.0360
97.0	0.0000	-0.0060	0.0174	-0.0018	-0.0372
99.0	0.0000	-0.0042	0.0108	-0.0036	-0.0402
101.0	0.0000	-0.0042	0.0048	-0.0060	-0.0546
103.0	0.0000	-0.0024	-0.0012	-0.0120	-0.0510
105.0	0.0000	-0.0078	-0.0066	-0.0138	-0.0468
107.0	0.0000	-0.0054	-0.0108	-0.0150	-0.0600
109.0	0.0000	-0.0066	-0.0150	-0.0132	-0.0468
111.0	0.0000	-0.0066	-0.0162	-0.0126	-0.0444
113.0	0.0000	-0.0060	-0.0198	-0.0114	-0.0492
115.0	0.0000	-0.0066	-0.0186	-0.0066	-0.0402
117.0	0.0000	-0.0042	-0.0216	-0.0054	-0.0480
119.0	0.0000	-0.0042	-0.0162	0.0036	-0.0396
121.0	0.0000	0.0000	0.0000	0.0000	0.0000

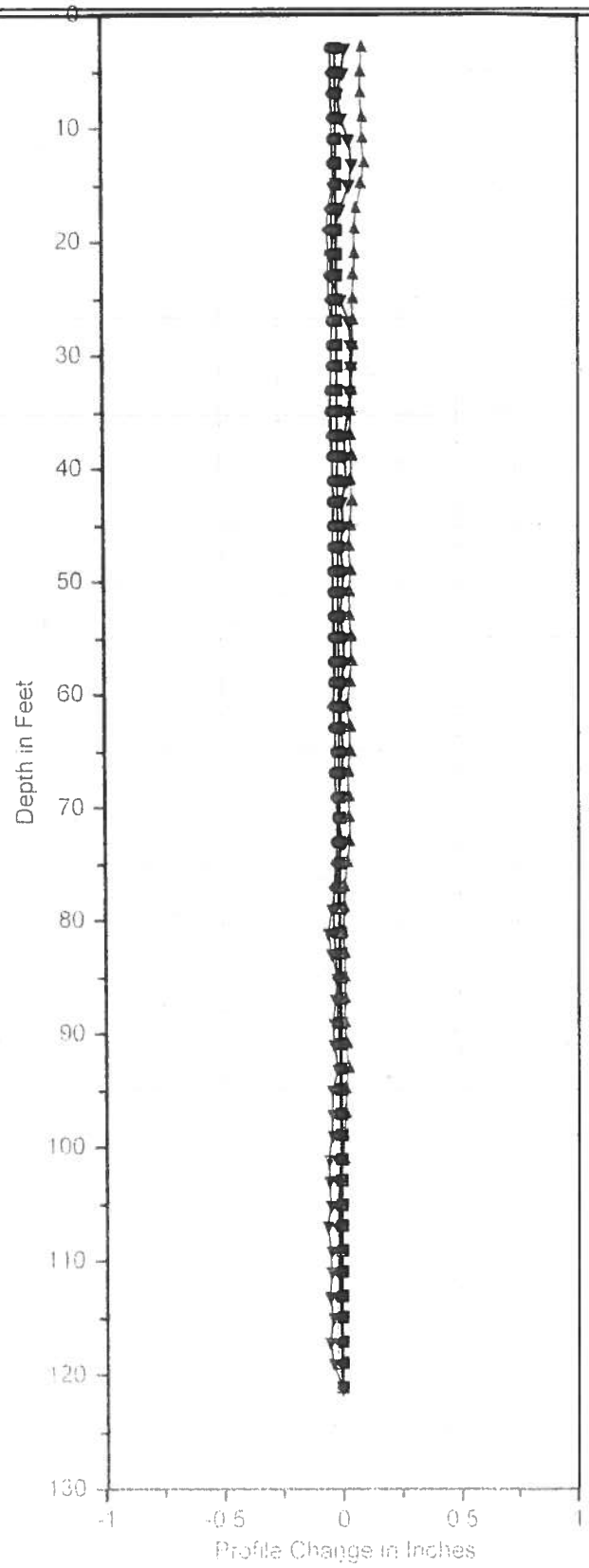
GVdam SI-1 A

12/7/2011 11/13/2013 5/19/2014
12/4/2014 5/19/2015



GVdam SI-1 B

12/7/2011 11/13/2013 5/19/2014
12/4/2014 5/19/2015



AEP Profile Change

GVdam SI-2 A					
Depth in Feet,	Profile Change: Profile Change in Inches				
Depth	11/2/1993	11/13/2013	5/19/2014	12/4/2014	5/19/2015
2.0	0.0000	1.8372	1.9968	2.0106	1.9890
4.0	0.0000	1.2654	1.4430	1.4796	1.4814
6.0	0.0000	0.9528	1.1310	1.1454	1.1688
8.0	0.0000	0.9354	1.1118	1.1364	1.1520
10.0	0.0000	0.9378	1.1130	1.1454	1.1562
12.0	0.0000	0.9300	1.1052	1.1400	1.1496
14.0	0.0000	0.9186	1.0926	1.1268	1.1352
16.0	0.0000	0.9186	1.0932	1.1274	1.1346
18.0	0.0000	0.9198	1.0944	1.1298	1.1364
20.0	0.0000	0.9180	1.0938	1.1292	1.1364
22.0	0.0000	0.9120	1.0878	1.1232	1.1310
24.0	0.0000	0.9144	1.0902	1.1292	1.1358
26.0	0.0000	0.9186	1.0932	1.1310	1.1382
28.0	0.0000	0.9324	1.1070	1.1442	1.1508
30.0	0.0000	0.9480	1.1208	1.1544	1.1628
32.0	0.0000	0.9612	1.1310	1.1598	1.1712
34.0	0.0000	0.9840	1.1532	1.1820	1.1952
36.0	0.0000	0.9924	1.1574	1.1820	1.1964
38.0	0.0000	1.0218	1.1880	1.2180	1.2282
40.0	0.0000	1.0158	1.1790	1.2072	1.2186
42.0	0.0000	1.0002	1.1604	1.1868	1.1982
44.0	0.0000	0.9690	1.1280	1.1556	1.1652
46.0	0.0000	0.9162	1.0722	1.0992	1.1076
48.0	0.0000	0.8892	1.0404	1.0626	1.0734
50.0	0.0000	0.8742	1.0218	1.0434	1.0536
52.0	0.0000	0.8544	1.0002	1.0206	1.0308
54.0	0.0000	0.8436	0.9858	1.0026	1.0140
56.0	0.0000	0.8370	0.9762	0.9906	1.0032
58.0	0.0000	0.8394	0.9768	0.9906	1.0026
60.0	0.0000	0.8412	0.9744	0.9876	1.0002
62.0	0.0000	0.8382	0.9672	0.9822	0.9936
64.0	0.0000	0.8052	0.9288	0.9420	0.9540
66.0	0.0000	0.7608	0.8808	0.8964	0.9042
68.0	0.0000	0.7032	0.8184	0.8310	0.8394
70.0	0.0000	0.6654	0.7758	0.7878	0.7950
72.0	0.0000	0.6360	0.7410	0.7530	0.7590
74.0	0.0000	0.6000	0.7008	0.7116	0.7176
76.0	0.0000	0.5562	0.6516	0.6636	0.6678
78.0	0.0000	0.5082	0.6042	0.6198	0.6198
80.0	0.0000	0.4428	0.5352	0.5460	0.5466
82.0	0.0000	0.3996	0.4866	0.4920	0.4956
84.0	0.0000	0.3708	0.4542	0.4608	0.4644
86.0	0.0000	0.3234	0.4008	0.4062	0.4098
88.0	0.0000	0.2736	0.3480	0.3528	0.3546
90.0	0.0000	0.2022	0.2688	0.2658	0.2700
92.0	0.0000	0.2028	0.2670	0.2652	0.2706

AEP Profile Change

GVdam SI-2 A					
Depth in Feet,	Profile Change, Profile Change in Inches				
Depth	11/2/1993	11/13/2013	5/19/2014	12/4/2014	5/19/2015
94.0	0.0000	0.1722	0.2310	0.2286	0.2328
96.0	0.0000	0.1524	0.2040	0.1956	0.2052
98.0	0.0000	0.1374	0.1854	0.1758	0.1872
100.0	0.0000	0.1200	0.1644	0.1554	0.1662
102.0	0.0000	0.0846	0.1284	0.1188	0.1266
104.0	0.0000	0.0558	0.0966	0.0858	0.0930
106.0	0.0000	0.0558	0.0936	0.0852	0.0906
108.0	0.0000	0.0552	0.0906	0.0846	0.0882
110.0	0.0000	0.0486	0.0780	0.0714	0.0762
112.0	0.0000	0.0210	0.0474	0.0426	0.0450
114.0	0.0000	0.0120	0.0312	0.0246	0.0276
116.0	0.0000	0.0042	0.0198	0.0132	0.0168
118.0	0.0000	-0.0006	0.0102	0.0030	0.0066
120.0	0.0000	0.0012	0.0078	0.0006	0.0042
122.0	0.0000	0.0012	0.0060	0.0012	0.0036
124.0	0.0000	0.0012	0.0036	0.0018	0.0036
126.0	0.0000	0.0000	0.0000	0.0000	0.0000

AEP Profile Change

GVdam SI-2 B					
Depth in Feet,	Profile Change: Profile Change in Inches				
Depth	11/2/1993	11/13/2013	5/19/2014	12/4/2014	5/19/2015
2.0	0.0000	-0.6018	-0.4212	-0.3648	-0.2802
4.0	0.0000	-0.5334	-0.3240	-0.2394	-0.1836
6.0	0.0000	-0.4974	-0.2760	-0.1716	-0.1362
8.0	0.0000	-0.4830	-0.2682	-0.1752	-0.1374
10.0	0.0000	-0.4638	-0.2550	-0.1716	-0.1320
12.0	0.0000	-0.4422	-0.2322	-0.1542	-0.1140
14.0	0.0000	-0.4218	-0.2124	-0.1344	-0.0990
16.0	0.0000	-0.4044	-0.1968	-0.1224	-0.0870
18.0	0.0000	-0.3864	-0.1866	-0.1248	-0.0858
20.0	0.0000	-0.3660	-0.1698	-0.1080	-0.0726
22.0	0.0000	-0.3528	-0.1500	-0.0852	-0.0546
24.0	0.0000	-0.3360	-0.1302	-0.0630	-0.0366
26.0	0.0000	-0.3168	-0.1248	-0.0642	-0.0354
28.0	0.0000	-0.3204	-0.1290	-0.0822	-0.0492
30.0	0.0000	-0.3072	-0.1272	-0.0864	-0.0522
32.0	0.0000	-0.2958	-0.1212	-0.0846	-0.0522
34.0	0.0000	-0.2850	-0.1152	-0.0828	-0.0522
36.0	0.0000	-0.2712	-0.1008	-0.0666	-0.0396
38.0	0.0000	-0.2682	-0.1008	-0.0756	-0.0450
40.0	0.0000	-0.2508	-0.0870	-0.0642	-0.0342
42.0	0.0000	-0.2310	-0.0714	-0.0504	-0.0204
44.0	0.0000	-0.2184	-0.0594	-0.0378	-0.0096
46.0	0.0000	-0.2088	-0.0462	-0.0234	0.0024
48.0	0.0000	-0.2010	-0.0414	-0.0228	0.0036
50.0	0.0000	-0.1854	-0.0318	-0.0138	0.0114
52.0	0.0000	-0.1740	-0.0294	-0.0144	0.0102
54.0	0.0000	-0.1662	-0.0270	-0.0174	0.0084
56.0	0.0000	-0.1632	-0.0270	-0.0186	0.0060
58.0	0.0000	-0.1632	-0.0360	-0.0336	-0.0054
60.0	0.0000	-0.1572	-0.0330	-0.0312	-0.0054
62.0	0.0000	-0.1422	-0.0264	-0.0276	-0.0006
64.0	0.0000	-0.1128	-0.0012	-0.0072	0.0222
66.0	0.0000	-0.0846	0.0210	0.0180	0.0438
68.0	0.0000	-0.0606	0.0414	0.0348	0.0624
70.0	0.0000	-0.0402	0.0636	0.0588	0.0846
72.0	0.0000	-0.0270	0.0720	0.0690	0.0930
74.0	0.0000	-0.0066	0.0840	0.0798	0.1044
76.0	0.0000	0.0150	0.1056	0.1020	0.1254
78.0	0.0000	0.0432	0.1290	0.1266	0.1482
80.0	0.0000	0.0840	0.1680	0.1692	0.1878
82.0	0.0000	0.1056	0.1800	0.1806	0.1992
84.0	0.0000	0.1164	0.1884	0.1872	0.2070
86.0	0.0000	0.1308	0.2094	0.2124	0.2298
88.0	0.0000	0.1218	0.1896	0.1914	0.2106
90.0	0.0000	0.1428	0.2016	0.1974	0.2208
92.0	0.0000	0.1050	0.1596	0.1572	0.1746

AEP Profile Change

GVdam SI-2 B					
Depth in Feet	Profile Change: Profile Change in Inches				
Depth	11/2/1993	11/13/2013	5/19/2014	12/4/2014	5/19/2015
94.0	0.0000	0.0984	0.1440	0.1338	0.1524
96.0	0.0000	0.1068	0.1524	0.1584	0.1614
98.0	0.0000	0.0972	0.1404	0.1554	0.1524
100.0	0.0000	0.0576	0.0960	0.1068	0.1050
102.0	0.0000	-0.0114	0.0168	0.0204	0.0132
104.0	0.0000	0.0024	0.0294	0.0330	0.0258
106.0	0.0000	0.0144	0.0384	0.0420	0.0348
108.0	0.0000	0.0246	0.0444	0.0456	0.0408
110.0	0.0000	0.0222	0.0414	0.0432	0.0372
112.0	0.0000	0.0000	0.0120	0.0126	0.0060
114.0	0.0000	-0.0096	0.0012	-0.0012	-0.0066
116.0	0.0000	-0.0138	-0.0042	-0.0060	-0.0132
118.0	0.0000	-0.0186	-0.0078	-0.0084	-0.0174
120.0	0.0000	-0.0162	-0.0048	-0.0048	-0.0132
122.0	0.0000	-0.0150	-0.0072	-0.0036	-0.0102
124.0	0.0000	-0.0078	-0.0048	0.0012	-0.0048
126.0	0.0000	0.0000	0.0000	0.0000	0.0000

GVdam SI-2 A

GVdam SI-2 B

■ 11/2/1993 ● 11/13/2013 ▲ 5/19/2014
◆ 12/4/2014 ▼ 5/19/2015

■ 11/2/1993 ● 11/13/2013 ▲ 5/19/2014
◆ 12/4/2014 ▼ 5/19/2015

