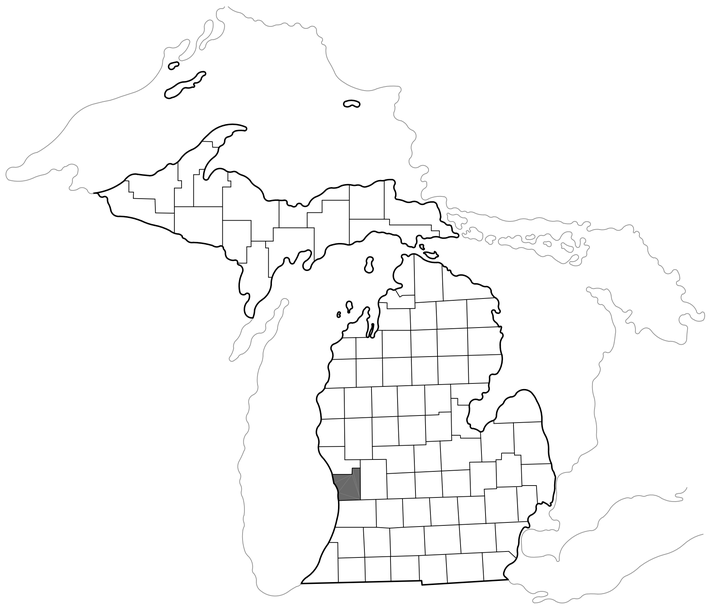
OTTAWA COUNTY FARMS LANDFILL LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION

POLKTON TOWNSHIP, OTTAWA COUNTY, MICHIGAN

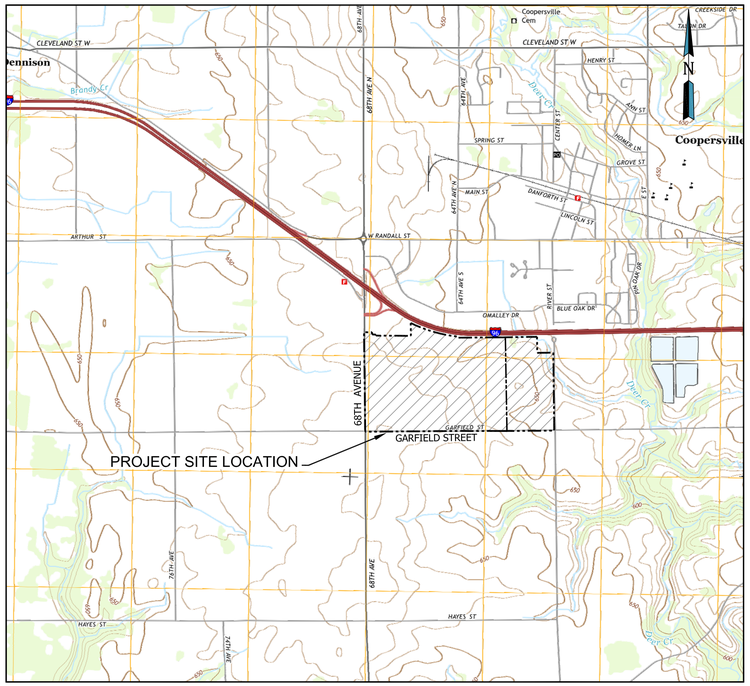
Ottawa County Farms Landfill

REPUBLIC SERVICES



STATE OF MICHIGAN

N.T.S.



PROJECT SITE LOCATION

SCALE: 1" = 2,000'

Drawing Index

SHEET No.	Description
1	Title Sheet
2	Legal Description
3	Existing Conditions
4	Topographical Map 1
5	Topographical Map 2
6	Topographical Map 3
7	Topographical Map 4
8	Topographical Map 5
9	Topographical Map 6
10	Overall Top of Liner Grading Plan
11	Overall Top of Leachate Collection System
12	Top of Leachate Collection System- Prior to Connection
13	Top of Leachate Collection System- After Connection
14	Top of Leachate Collection System- Phase 8
15	Phase Development Plan- Sheet 1
16	Phase Development Plan- Sheet 2
17	Phase Development Plan- Sheet 3
18	Overall Top of Waste Grading Plan
19	Overall Top of Final Cover Grading Plan
20	Landfill Cross Sections
21	Liner System Details
22	Leachate Collection System Details- Sheet 1
23	Leachate Collection System Details- Sheet 2
24	Leachate Collection System Details- Sheet 3
25	Leachate Storage Facility
26	Final Cover Details
27	Stormwater Management Plan
28	Stormwater Management Details
29	Sedimentation Basins #3 & #4
30	Sedimentation Basin Details
31	Overliner Base Grades Plan
32	Overliner Base Grades - Cross Section
33	Overliner Details
34	Landscaping Plan

OWNER/OPERATOR:

REPUBLIC SERVICES
OTTAWA COUNTY FARMS LANDFILL
15550 68TH AVENUE
COOPERSVILLE, MICHIGAN 49404
(616) 837-8195

ENGINEERING DESIGN:

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TAMARA A. PERKINS, P.E.

PREPARED FOR:

REPUBLIC SERVICES

OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION

COVER SHEET

OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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SHEET 1

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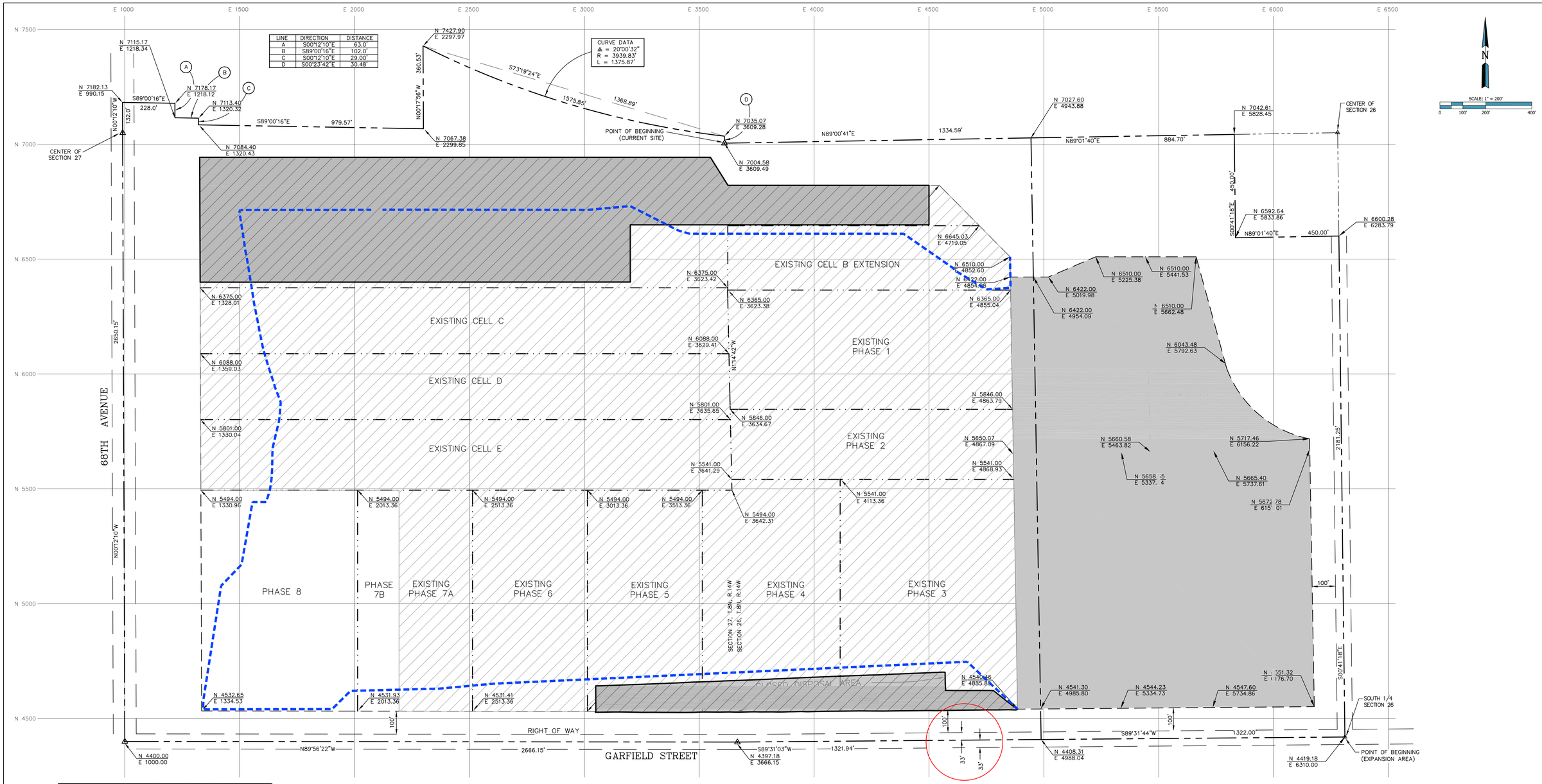

LINE	DIRECTION	DISTANCE
A	S00°12'10"E	63.0'
B	S89°00'16"E	102.0'
C	S00°12'10"E	29.00'
D	S00°23'42"E	30.48'

CELL OR PHASE	TOTAL ACRES	ACTIVE ACRES	CLOSED ACRES	UNCONSTRUCTED ACRES
CELL A	14.73	--	14.73	--
CELL A EXTENSION	4.07	0.73	3.34	--
CELL B	15.13	2.02	13.11	--
CELL B EXTENSION	7.70	7.70	--	--
CELL C	15.14	15.14	--	--
CELL D	15.17	15.17	--	--
CELL E	16.26	16.26	--	--
PHASE 1	14.66	14.66	--	--
PHASE 2	8.60	8.60	--	--
PHASE 3	17.61	15.49	2.12	--
PHASE 4	13.76	11.88	1.88	--
PHASE 5	11.06	9.80	1.26	--
PHASE 6	11.05	11.05	--	--
PHASE 7	11.05	11.05	--	--
PHASE 8	15.03	--	--	15.03
PHASE 9	11.09	--	--	11.09
PHASE 10	7.13	--	--	7.13
PHASE 11	11.73	--	--	11.73
PHASE 12	10.25	--	--	10.25
PHASE 13	11.07	--	--	11.07
OVERLINER	84.92	--	--	84.92
TOTAL FOOTPRINT	242.32	139.55	35.70	66.33

Note: 0.74 acres of Cell B are considered final cover transition

LEGAL DESCRIPTION OF CURRENT SITE

THAT PART OF SECTION 26 AND 27, T8N, R14W, POLKTON TOWNSHIP, OTTAWA COUNTY, MICHIGAN, DESCRIBED AS BEGINNING AT THE NORTHWEST CORNER OF THE SOUTHWEST 1/4 OF SAID SECTION 26; THENCE N89°00'41"E 1334.59 FEET ALONG THE NORTH LINE OF SAID SOUTHWEST 1/4; THENCE S00°57'57"E 2619.66 FEET ALONG THE EAST LINE OF THE NORTHWEST 1/4 AND SOUTHWEST 1/4 OF SAID SOUTHWEST 1/4; THENCE S89°31'03"W 1321.94 FEET ALONG THE SOUTH LINE OF THE SOUTHWEST 1/4 OF SECTION 26; THENCE N89°56'22"W 2,666.15 FEET ALONG THE SOUTH LINE OF THE SOUTHEAST 1/4 OF SECTION 27; THENCE N00°12'10"W 2650.15 FEET ALONG THE NORTH AND SOUTH 1/4 LINE OF SAID SECTION 27 TO THE CENTER OF SECTION 27; THENCE CONTINUING N00°12'10"W 132.0 FEET; THENCE S89°00'16"E 228.0 FEET; THENCE S00°12'10"E 63.0 FEET; THENCE S89°00'16"E 102.0 FEET; THENCE S00°12'10"E 29.00 FEET; THENCE S89°00'16"E 979.57 FEET, 40 FEET NORTH OF AND PARALLEL TO THE EAST AND WEST 1/4 LINE OF SAID SECTION 27; THENCE N00°17'56"W 360.53 FEET ALONG THE WEST LINE OF THE SOUTHEAST 1/4 OF THE NORTHEAST 1/4 OF SAID SECTION 27 TO THE SOUTHERLY RIGHT-OF-WAY LINE OF HIGHWAY I-96, SAID LINE BEING 20 FEET SOUTHERLY OF, MEASURED AT RIGHT ANGLES AND PARALLEL WITH THE MEDIAN CENTERLINE OF SAID HIGHWAY; THENCE EASTERLY 1375.85 FEET ALONG SAID RIGHT-OF-WAY LINE ON A 3939.83 FOOT RADIUS CURVE TO THE LEFT, THE LONG CHORD BEARING S73°19'24"E 1368.89 FEET; THENCE S00°23'42"E 30.48 FEET ALONG THE EAST LINE OF SAID SECTION 27, TO THE PLACE OF BEGINNING. SUBJECT TO A RIGHT-OF-WAY FOR HIGHWAY PURPOSES FOR GARFIELD STREET OVER THE SOUTHERLY 33 FEET OF SECTION 26 AND 27; ALSO SUBJECT TO A RIGHT-OF-WAY FOR HIGHWAY PURPOSES FOR 68TH AVENUE OVER THE WESTERLY 50 FEET OF THE NORTHEAST 1/4 AND SOUTHEAST 1/4 OF SECTION 27; ALSO SUBJECT TO EASEMENTS, RESTRICTIONS, AND RIGHT-OF-WAY OF RECORD, IF ANY EXIST.

THE PARCEL CONTAINS 246.13 ACRES, 191.02 ACRES CONTAINED WITHIN THE SOLID WASTE BOUNDARY AND CURRENTLY PERMITTED TO RECEIVE WASTE UNDER THE MICHIGAN SOLID WASTE MANAGEMENT ACT, PUBLIC ACT 641 OF 1978.

LEGAL DESCRIPTION OF PROPOSED EXPANSION AREA

THE EAST 1/2 OF THE SOUTHWEST 1/4 OF SECTION 26, T8N, R14W, EXCEPT THE NORTH 450.0 FEET OF THE EAST 450.0 FEET, POLKTON TOWNSHIP, OTTAWA COUNTY, MICHIGAN. LIBER 2913, PAGE 666.

FURTHER DESCRIBED AS: COMMENCING AT THE SOUTH 1/4 CORNER OF SAID SECTION 26; THENCE S89°31'44"W 1322.0 FEET ALONG THE SOUTH LINE OF THE SOUTHWEST 1/4 OF SAID SECTION; THENCE N00°57'57"W 2619.66 FEET ALONG THE WEST LINE OF THE EAST 1/2, SOUTHWEST 1/4 OF SAID SECTION; THENCE 89°01'40"E 884.70 FEET ALONG THE EAST AND WEST 1/4 LINE OF SAID SECTION; THENCE S00°41'18"E 450.0 FEET; THENCE N89°01'40"E 450.0 FEET; THENCE S00°41'18"E 2181.25 FEET ALONG THE NORTH AND SOUTH 1/4 LINE OF SAID SECTION TO THE POINT OF BEGINNING; ALSO SUBJECT TO EASEMENTS, RESTRICTIONS, AND RIGHT-OF-WAY OF RECORD, IF ANY EXIST.

THE PARCEL CONTAINS 75.41 ACRES, 51.3 ACRES CONTAINED WITHIN THE PROPOSED SOLID WASTE BOUNDARY.

NOTES:

1. DATA PRESENTED HEREIN AS OF APRIL 30, 2016.

LEGEND

- PROPERTY LINE
- SOLID WASTE BOUNDARY
- CELL BOUNDARY
- SURVEY CONTROL POINT
- CONSTRUCTED AREA
- CLOSED DISPOSAL AREA
- LATERAL EXPANSION AREA
- LIMITS OF VERTICAL EXPANSION

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PREPARED FOR:

REPUBLIC SERVICES

OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION

LEGAL DESCRIPTION

OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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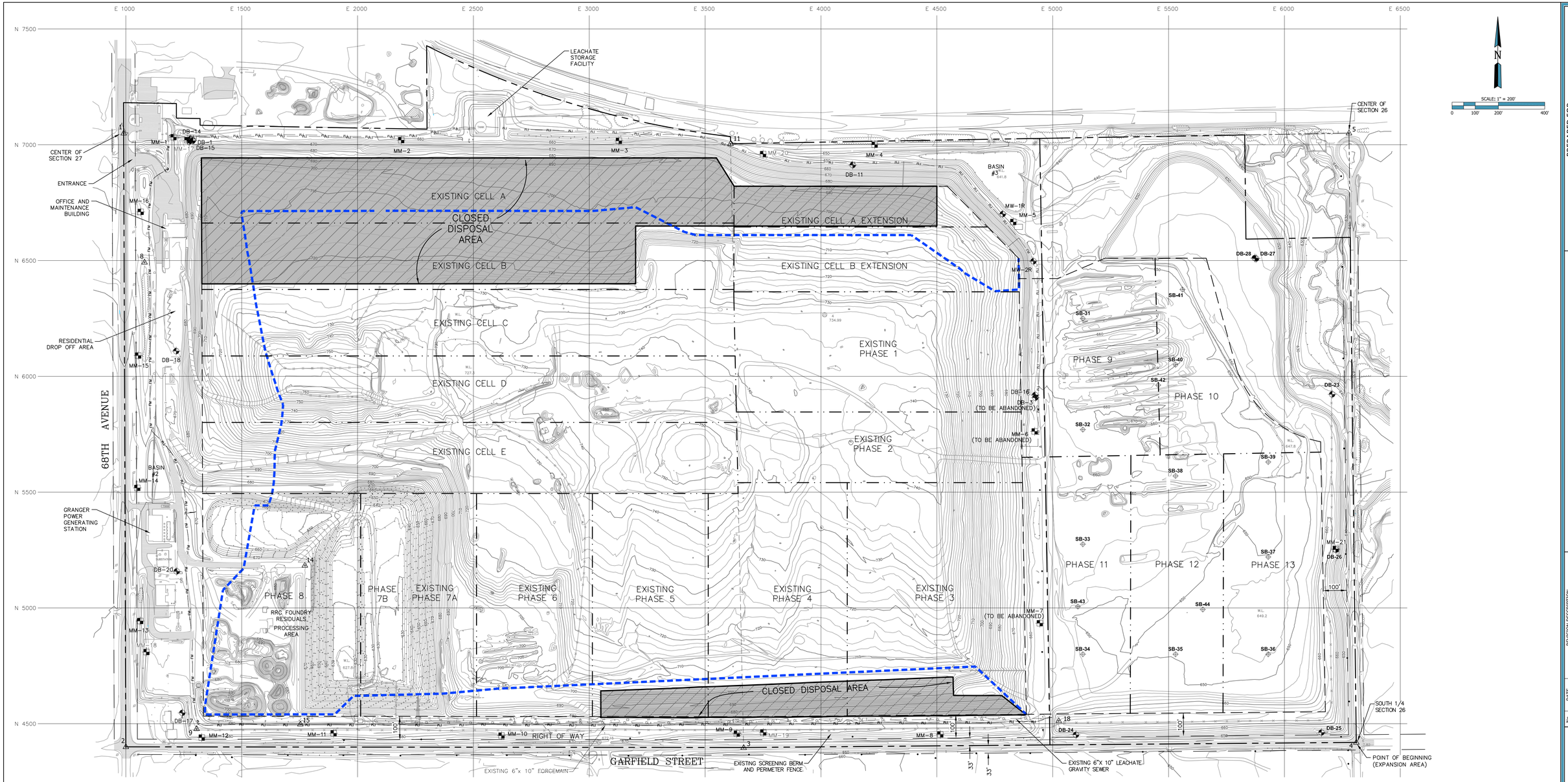
SHEET 2



SURVEY CONTROL POINT SUMMARY				
CP (BM)	NORTHING	EASTING	ELEVATION	COMMENT
1	7050.13	990.62	670.15	MON.
2	4400.00	1000.00	-	MON.
3	4396.18	3666.15	664.04	MON.
4	4419.18	6309.99	647.38	MON.
5	7050.26	6278.40	611.00	MON.
8	6492.46	1080.51	678.93	IRON
9	4477.99	1305.24	683.66	IRON
11	7004.58	3609.49	655.17	MON.
14	5183.57	1772.36	673.90	PK
15	4497.62	1752.87	681.80	IRON
18	4512.56	5025.88	664.57	IRON

NOTES:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.
2. PHASE 7A IS CURRENTLY EXISTING AND 7B IS BEING CONSTRUCTED IN 2016.

LEGEND

- PROPERTY LINE
- SOLID WASTE BOUNDARY
- CELL BOUNDARY
- RIGHT OF WAY
- LIMITS OF VERTICAL EXPANSION
- EXISTING LEACHATE FORCEMAIN
- EXISTING LEACHATE GRAVITY SEWER
- SURVEY CONTROL POINT
- EXISTING UTILITY POLE
- EXISTING MONITORING WELL
- MM-20 EXISTING METHANE (MM) MONITORING PROBES
- DB-25 EXPANSION AREA SOIL BORING LOCATION

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15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION

EXISTING CONDITIONS

OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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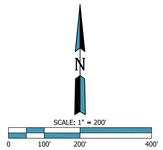

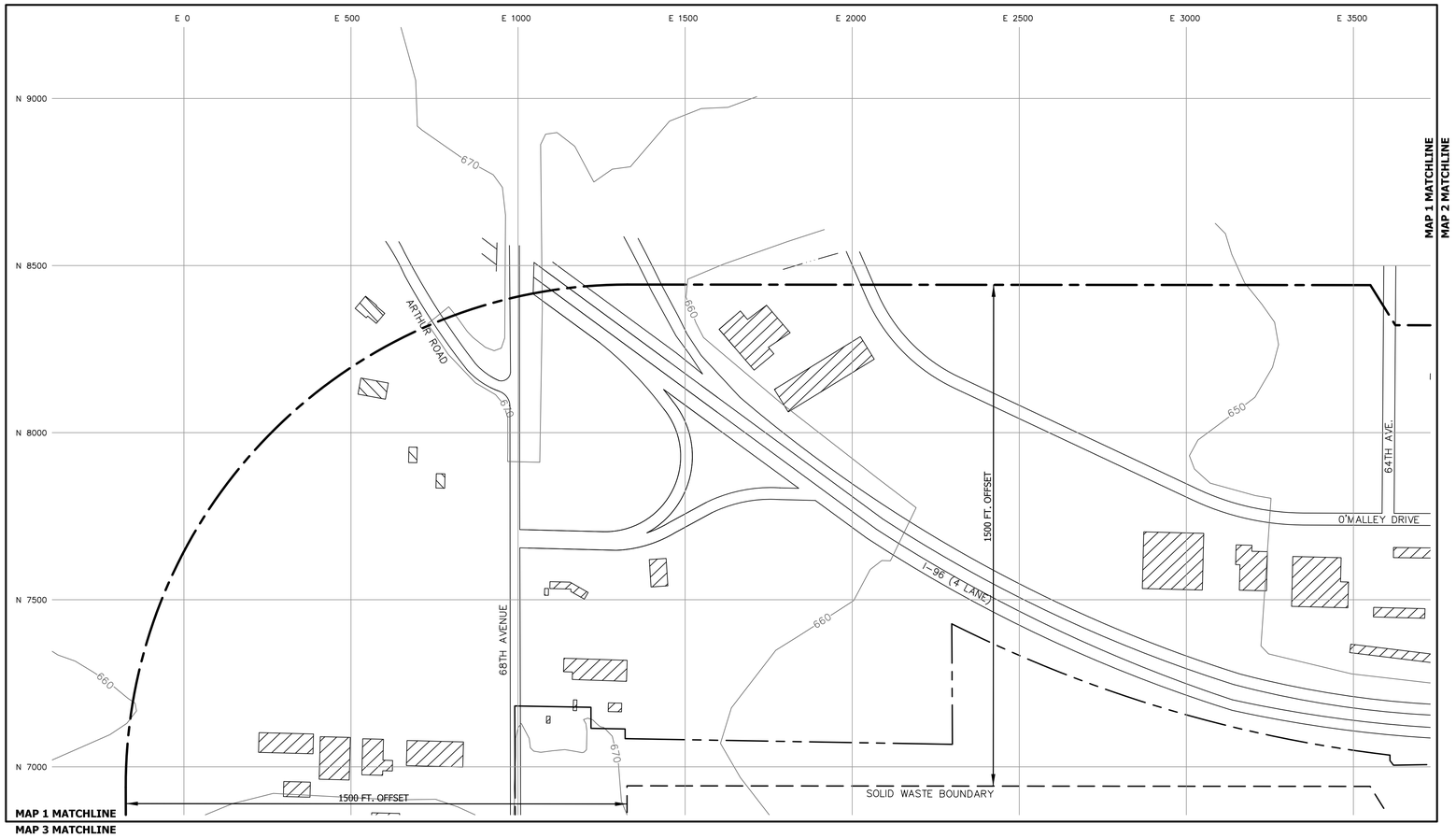

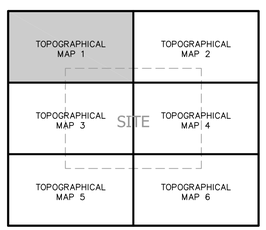

KEY MAP
NOT TO SCALE

NOTES:

1. ADAPTED FROM USGS QUADRANGLE MAP TITLED "COOPERSVILLE, MI 2014", AND EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.

LEGEND

- SOLID WASTE BOUNDARY
- 1500 FT. OFFSET
- PROPERTY LINE
- EXISTING BUILDING
- EXISTING RESIDENCE
- 670 — EXISTING 10' CONTOUR

PREPARED FOR:

REPUBLIC SERVICES

OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
TOPOGRAPHICAL MAP 1
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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SHEET 4

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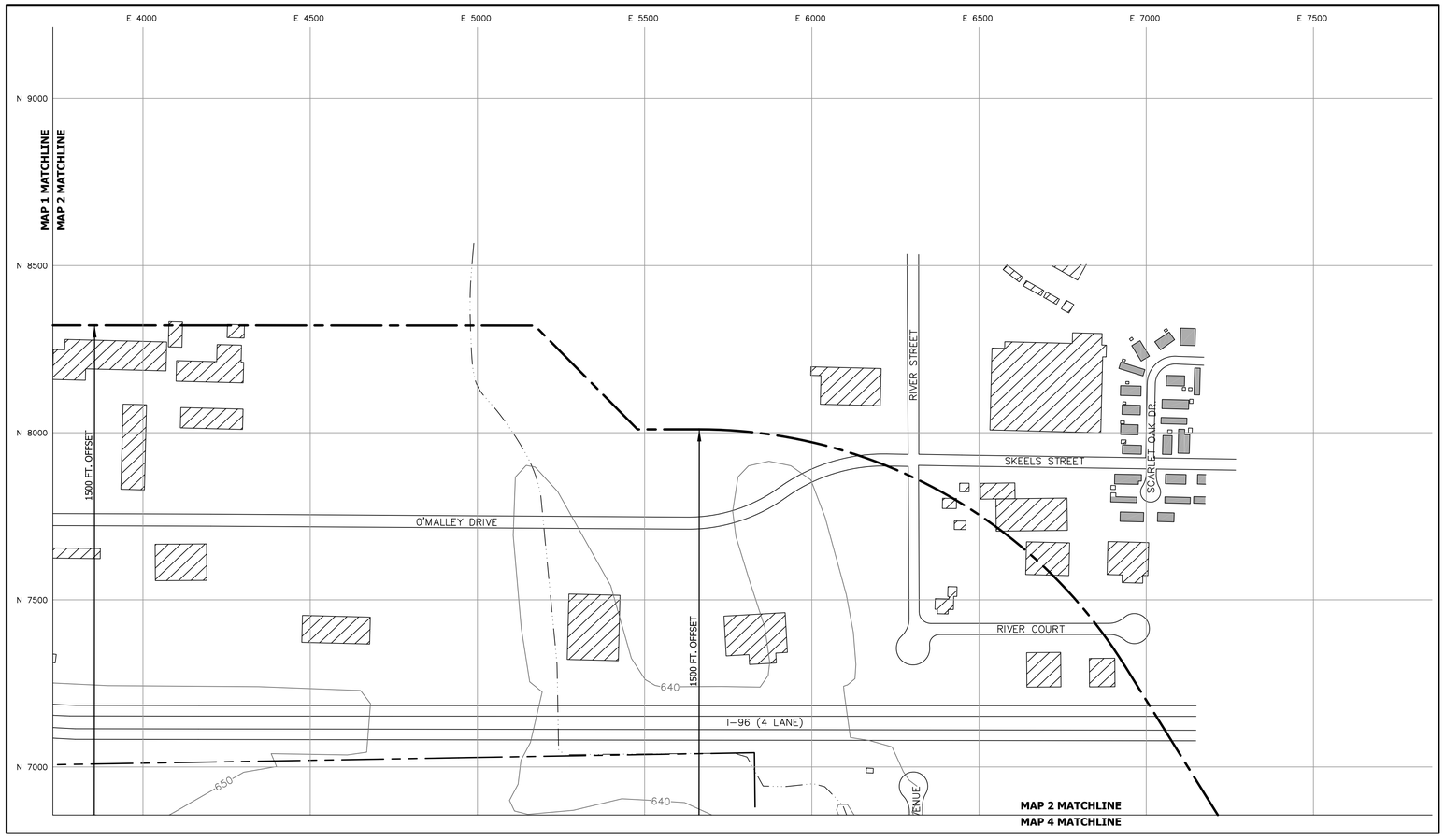

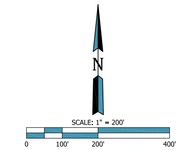

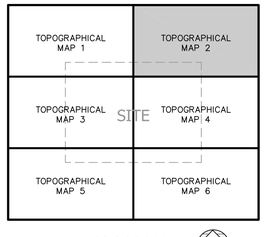

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NOTES:

1. ADAPTED FROM USGS QUADRANGLE MAP TITLED "COOPERSVILLE, MI 2014", AND EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.

LEGEND

- SOLID WASTE BOUNDARY
- 1500 FT. OFFSET
- PROPERTY LINE
- EXISTING BUILDING
- EXISTING RESIDENCE
- 670 — EXISTING 10' CONTOUR

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15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
TOPOGRAPHICAL MAP 2

OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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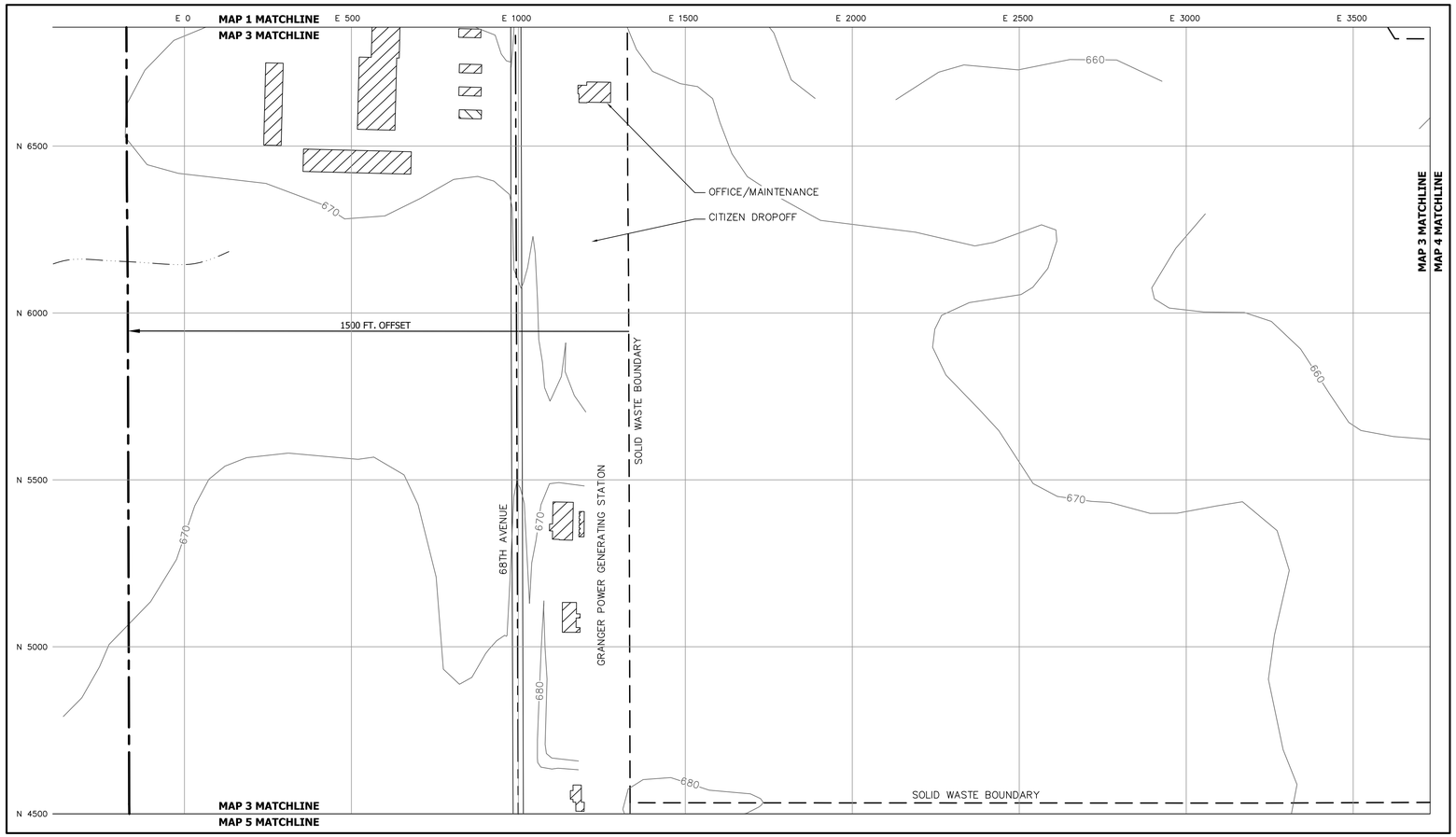

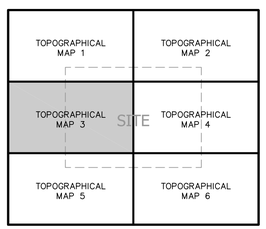

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LEGEND

- SOLID WASTE BOUNDARY
- 1500 FT. OFFSET
- PROPERTY LINE
- EXISTING BUILDING
- EXISTING RESIDENCE
- 670 EXISTING 10' CONTOUR

SCALE: 1" = 200'
0 100' 200' 400'

PREPARED FOR:
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COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
TOPOGRAPHICAL MAP 3
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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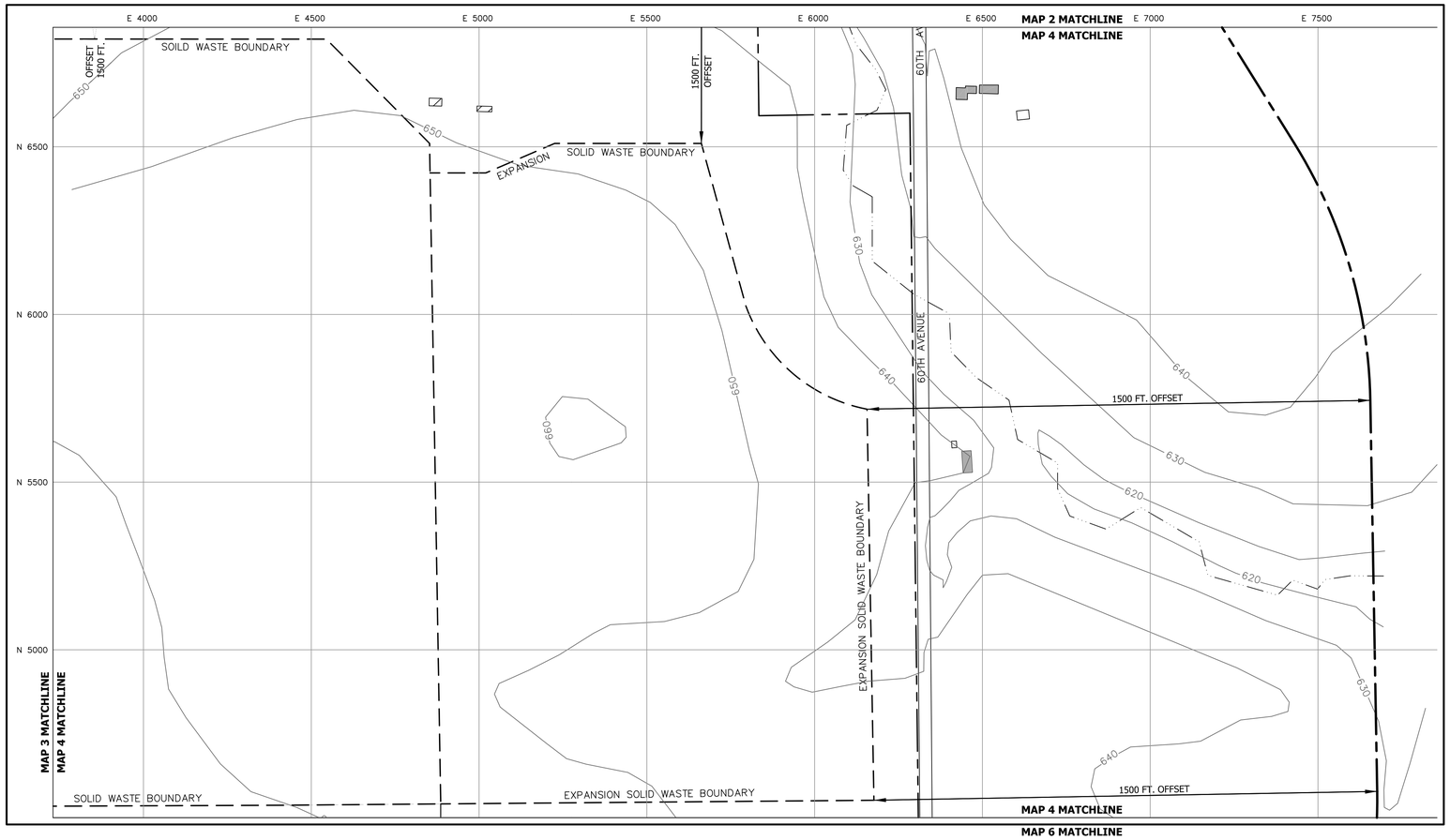

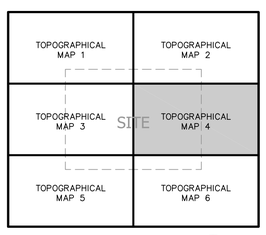

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- 1500 FT. OFFSET
- PROPERTY LINE
- EXISTING BUILDING
- EXISTING RESIDENCE
- 670 EXISTING 10' CONTOUR

SCALE: 1" = 200'
0 100' 200' 400'

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COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
TOPOGRAPHICAL MAP 4
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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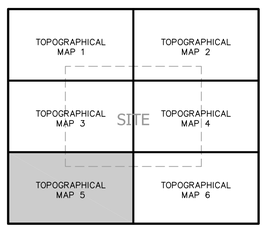

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NOTES:

1. ADAPTED FROM USGS QUADRANGLE MAP TITLED "COOPERSVILLE, MI 2014", AND EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.

LEGEND

- SOLID WASTE BOUNDARY
- 1500 FT. OFFSET
- PROPERTY LINE
- EXISTING BUILDING
- EXISTING RESIDENCE
- 670 EXISTING 10' CONTOUR

SCALE: 1" = 200'
0 100' 200' 400'

PREPARED FOR:
REPUBLIC SERVICES
OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
TOPOGRAPHICAL MAP 5
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

WEAVER CONSULTANTS GROUP
400 ANN STREET N.W., SUITE 201A
GRAND RAPIDS, MICHIGAN 49504
(616) 458-8052
www.wcgrp.com

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SHEET 8

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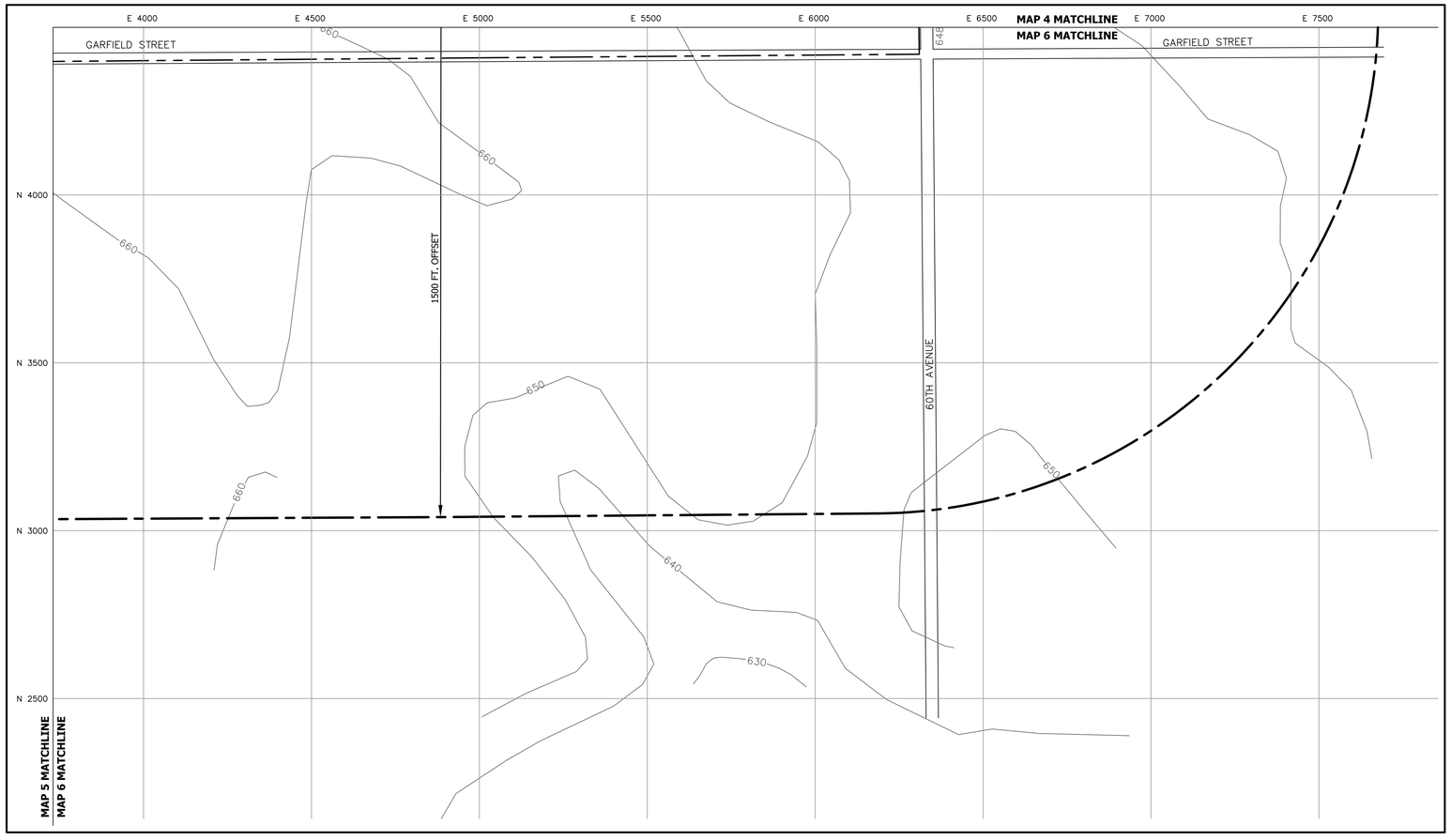

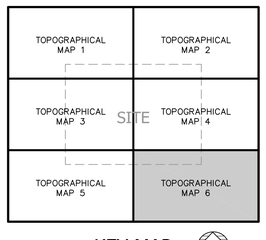

KEY MAP
NOT TO SCALE

NOTES:

1. ADAPTED FROM USGS QUADRANGLE MAP TITLED "COOPERSVILLE, MI 2014", AND EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.

LEGEND

- SOLID WASTE BOUNDARY
- 1500 FT. OFFSET
- PROPERTY LINE
- EXISTING BUILDING
- EXISTING RESIDENCE
- 670 EXISTING 10' CONTOUR

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SCALE: 1" = 200'
0 100' 200' 400'

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15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
TOPOGRAPHICAL MAP 6
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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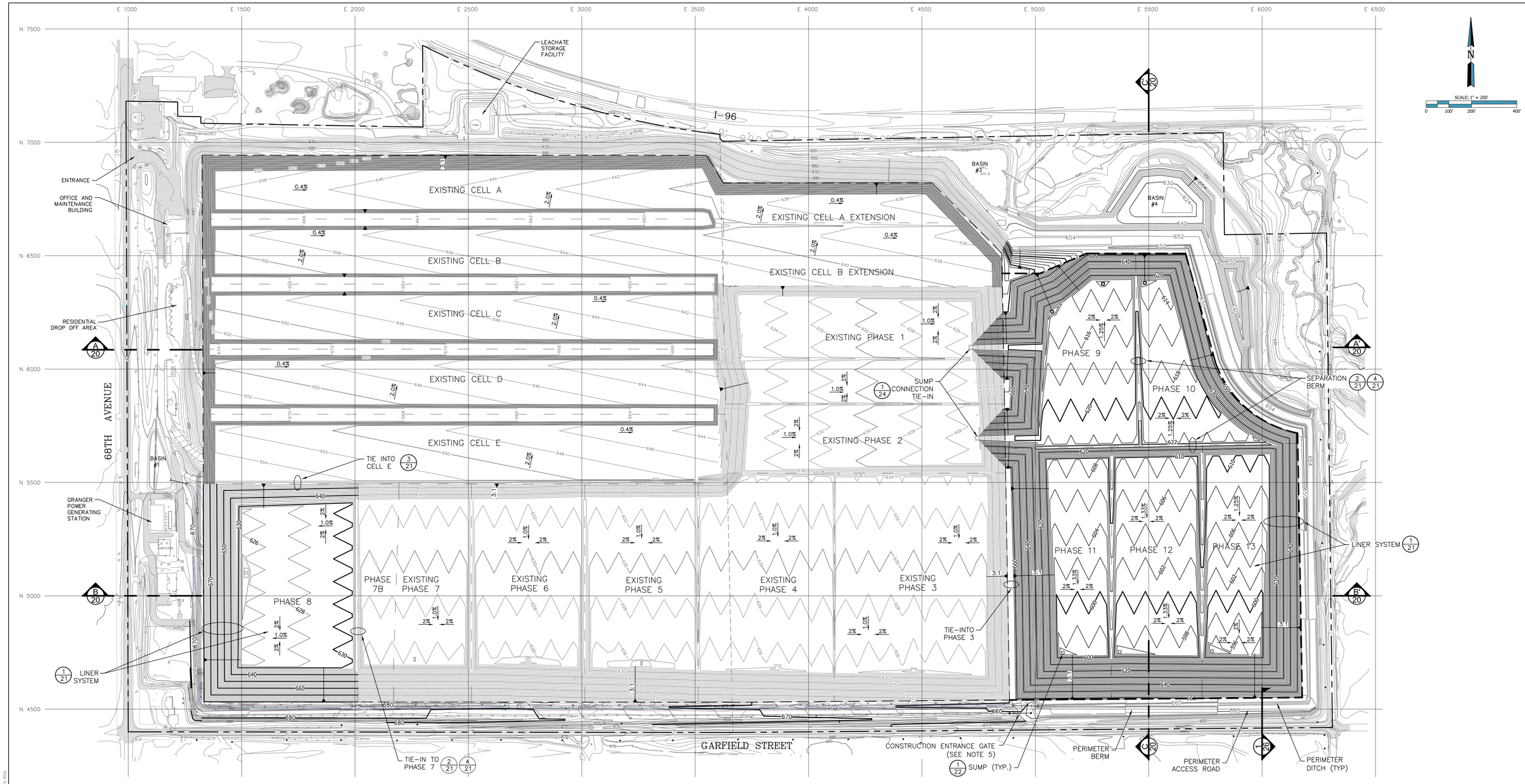

LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- PHASE/CELL BOUNDARY
- 670 EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- 670 AS-BUILT TOP OF LINER CONTOUR (10 FT. INTERVAL)
- AS-BUILT TOP OF LINER CONTOUR (2 FT. INTERVAL)
- 670 PROPOSED/FUTURE TOP OF LINER CONTOUR (10 FT. INTERVAL)
- PROPOSED/FUTURE TOP OF LINER CONTOUR (2 FT. INTERVAL)
- EXISTING UTILITY POLE

NOTE:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.
2. CELLS A THROUGH E ARE PRE-SUBTITLE D SOIL LINED. CONTOURS ADAPTED FROM AVAILABLE AS-BUILT RECORDS AND DESIGN GRADES, SHOWN FOR INFORMATIONAL PURPOSES ONLY.
3. PHASES 1 THROUGH 7A ARE SUBTITLE D LINED. CONTOURS ADAPTED FROM AS-BUILT RECORDS AND ARE SHOWN FOR INFORMATIONAL PURPOSES.
4. PHASE 7B WILL BE CONSTRUCTED DURING 2016.
5. CONSTRUCTION ENTRANCE GATE TO REMAIN IN PLACE UNTIL AFTER PHASE 11 IS CONSTRUCTED. SCREENING BERM, ROAD AND DITCH WILL THEN BE EXTENDED.

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PREPARED FOR:

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OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
OVERALL TOP OF LINER GRADING PLAN

OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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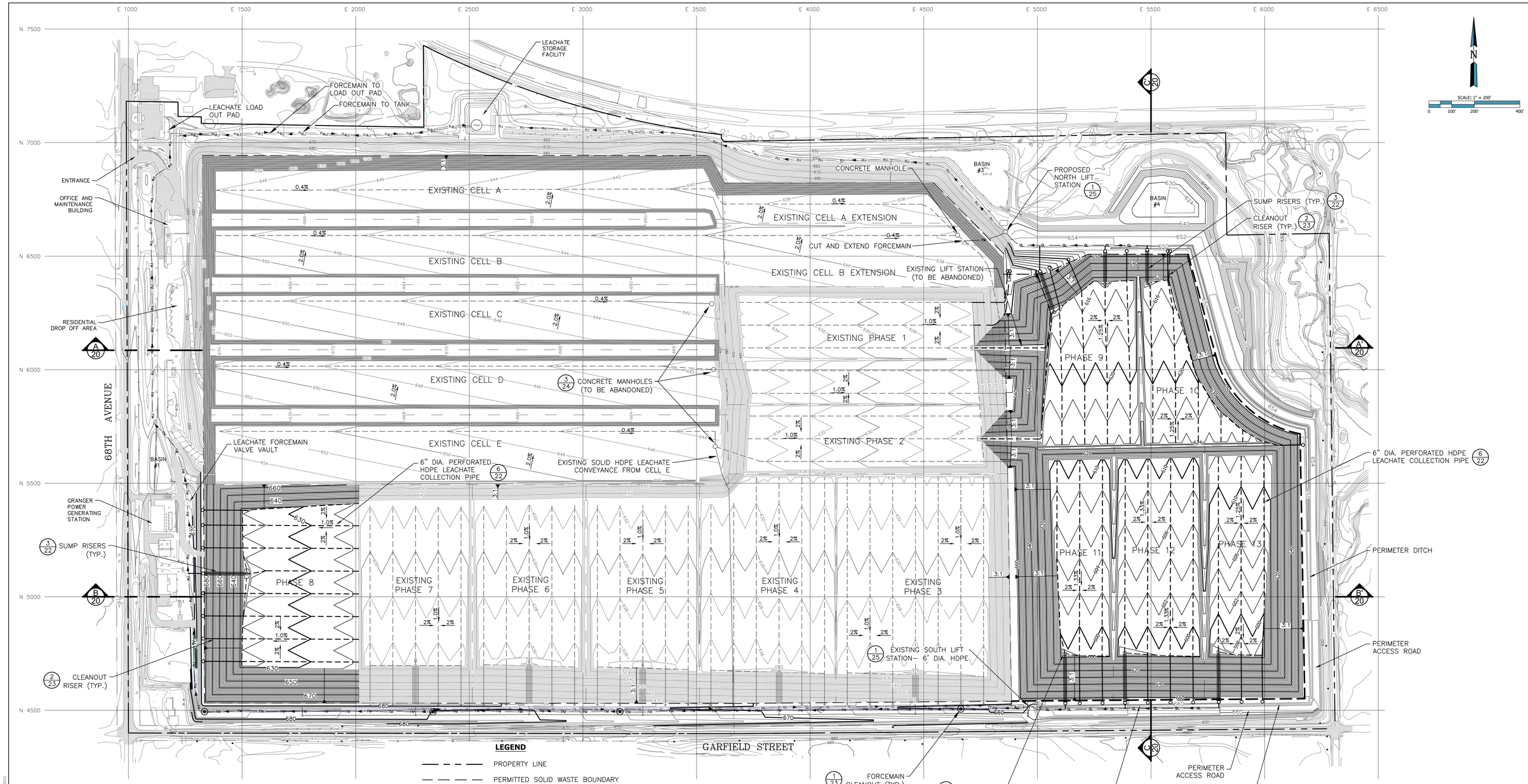
SHEET 10



LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- 670 — EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- 670 — AS–BUILT TOP OF LINER SYSTEM CONTOUR (10 FT. INTERVAL) – SEE NOTE 2
- AS–BUILT TOP OF LINER CONTOUR (2 FT. INTERVAL) – SEE NOTE 2
- 670 — PROPOSED/FUTURE TOP OF LEACHATE COLLECTION SYSTEM CONTOUR (10 FT. INTERVAL)
- PROPOSED/FUTURE TOP OF LEACHATE COLLECTION SYSTEM CONTOUR (2 FT. INTERVAL)
- EXISTING LEACHATE COLLECTION PIPE
- PROPOSED LEACHATE COLLECTION PIPE
- FORCEMAIN CLEANOUT
- LEACHATE COLLECTION PIPE CLEANOUT RISER
- FM — FM — EXISTING LEACHATE FORCEMAIN
- GL — GL — EXISTING LEACHATE GRAVITY SEWER
- GL — GL — PROPOSED/FUTURE LEACHATE GRAVITY SEWER
- EXISTING UTILITY POLE

NOTES:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.
2. PHASE 7A IS EXISTING AND 7B IS BEING CONSTRUCTED IN 2016.
3. GRADES SHOWN FOR CELL A THROUGH E AND PHASES 1 THROUGH 7 ARE TOP OF LINER CONTOURS AND SHOWN FOR INFORMATIONAL PURPOSES AND ARE NOT INTENDED TO SHOW AS–BUILT TOP OF LEACHATE COLLECTION SYSTEM CONTOURS.
4. ACCESS ROAD ON SOUTH AND EAST PERIMETER SHALL NOT BE USED FOR WASTE OR SOIL HAUL ROUTES.

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PREPARED FOR:
REPUBLIC SERVICES
OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
OVERALL TOP OF LEACHATE COLLECTION SYSTEM
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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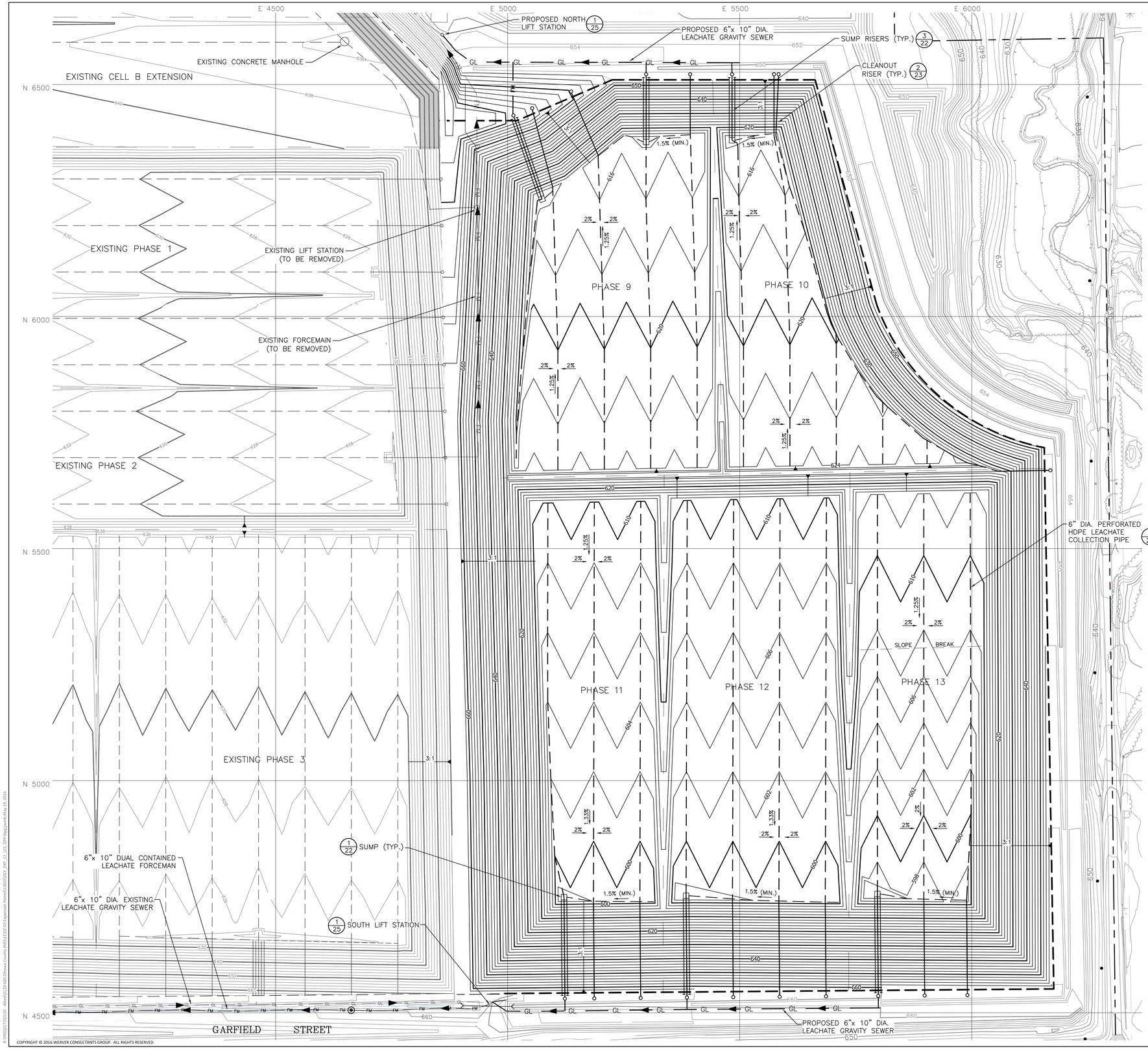

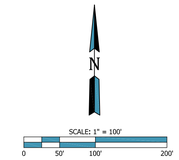

NOTES:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.
2. GRADES SHOWN FOR CELL A THROUGH E AND PHASES 1 THROUGH 7 ARE TOP OF LINER CONTOURS AND SHOWN FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT INTENDED TO SHOW AS-BUILT TOP OF LEACHATE COLLECTION SYSTEM CONTOURS.
3. REFER TO SUMP CONNECTION CONSTRUCTION PLAN IN ATTACHMENT 11, FOR SEQUENCE.

LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- 670 — EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- 670 — AS-BUILT TOP OF LINER SYSTEM CONTOUR (10 FT. INTERVAL) – SEE NOTE 2
- AS-BUILT TOP OF LINER CONTOUR (2 FT. INTERVAL) – SEE NOTE 2
- 670 — PROPOSED/FUTURE TOP OF LEACHATE COLLECTION SYSTEM CONTOUR (10 FT. INTERVAL)
- PROPOSED/FUTURE TOP OF LEACHATE COLLECTION SYSTEM CONTOUR (2 FT. INTERVAL)
- EXISTING LEACHATE COLLECTION PIPE
- PROPOSED LEACHATE COLLECTION PIPE
- FORCEMAIN CLEANOUT
- LEACHATE COLLECTION PIPE CLEANOUT RISER
- SUMP SIDESLOPE RISER
- FM — EXISTING FORCEMAIN
- GL — EXISTING GRAVITY LINE
- GL — PROPOSED/FUTURE GRAVITY LINE
- EXISTING UTILITY POLE

PREPARED FOR:

REPUBLIC SERVICES

OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
TOP OF LEACHATE COLLECTION SYSTEM - PRIOR TO CONNECTION
OTTAWA COUNTY FARMS LANDFILL - OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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SHEET 12

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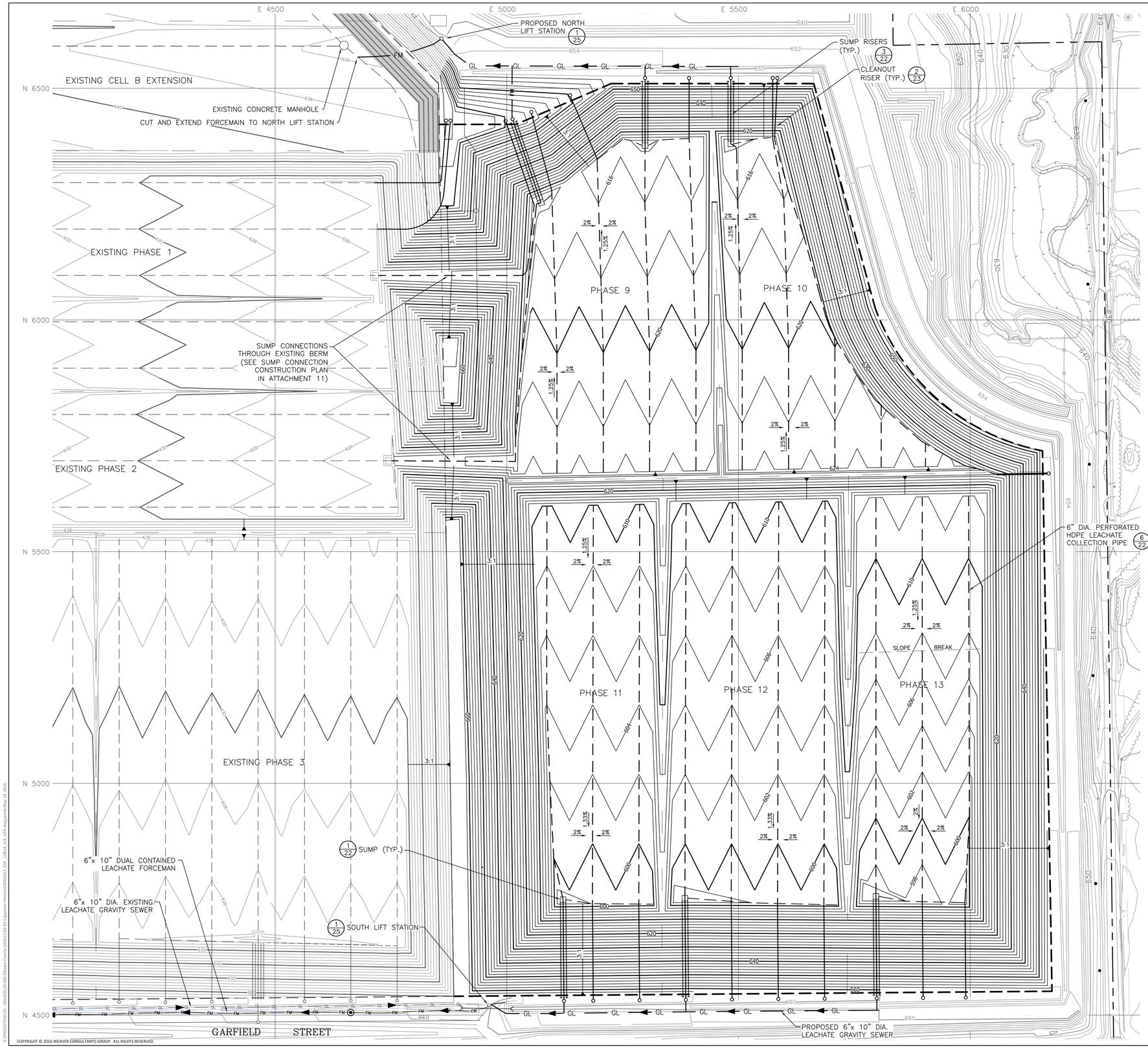

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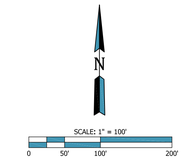

NOTES:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.
2. GRADES SHOWN FOR CELL A THROUGH E AND PHASES 1 THROUGH 7 ARE TOP OF LINER CONTOURS AND SHOWN FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT INTENDED TO SHOW AS–BUILT TOP OF LEACHATE COLLECTION SYSTEM CONTOURS.
3. REFER TO SUMP CONNECTION CONSTRUCTION PLAN IN ATTACHMENT 11, FOR SEQUENCE.

LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- 670 EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- 670 AS–BUILT TOP OF LINER SYSTEM CONTOUR (10 FT. INTERVAL) – SEE NOTE 2
- AS–BUILT TOP OF LINER CONTOUR (2 FT. INTERVAL) – SEE NOTE 2
- 670 PROPOSED/FUTURE TOP OF LEACHATE COLLECTION SYSTEM CONTOUR (10 FT. INTERVAL)
- PROPOSED/FUTURE TOP OF LEACHATE COLLECTION SYSTEM CONTOUR (2 FT. INTERVAL)
- EXISTING LEACHATE COLLECTION PIPE
- PROPOSED LEACHATE COLLECTION PIPE
- FORCEMAIN CLEANOUT
- LEACHATE COLLECTION PIPE CLEANOUT RISER
- SUMP SIDESLOPE RISER
- FM EXISTING FORCEMAIN
- GL EXISTING GRAVITY LINE
- GL PROPOSED/FUTURE GRAVITY LINE
- EXISTING UTILITY POLE

PREPARED FOR:

REPUBLIC SERVICES

OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
TOP OF LEACHATE COLLECTION SYSTEM - AFTER CONNECTION

OTTAWA COUNTY FARMS LANDFILL - OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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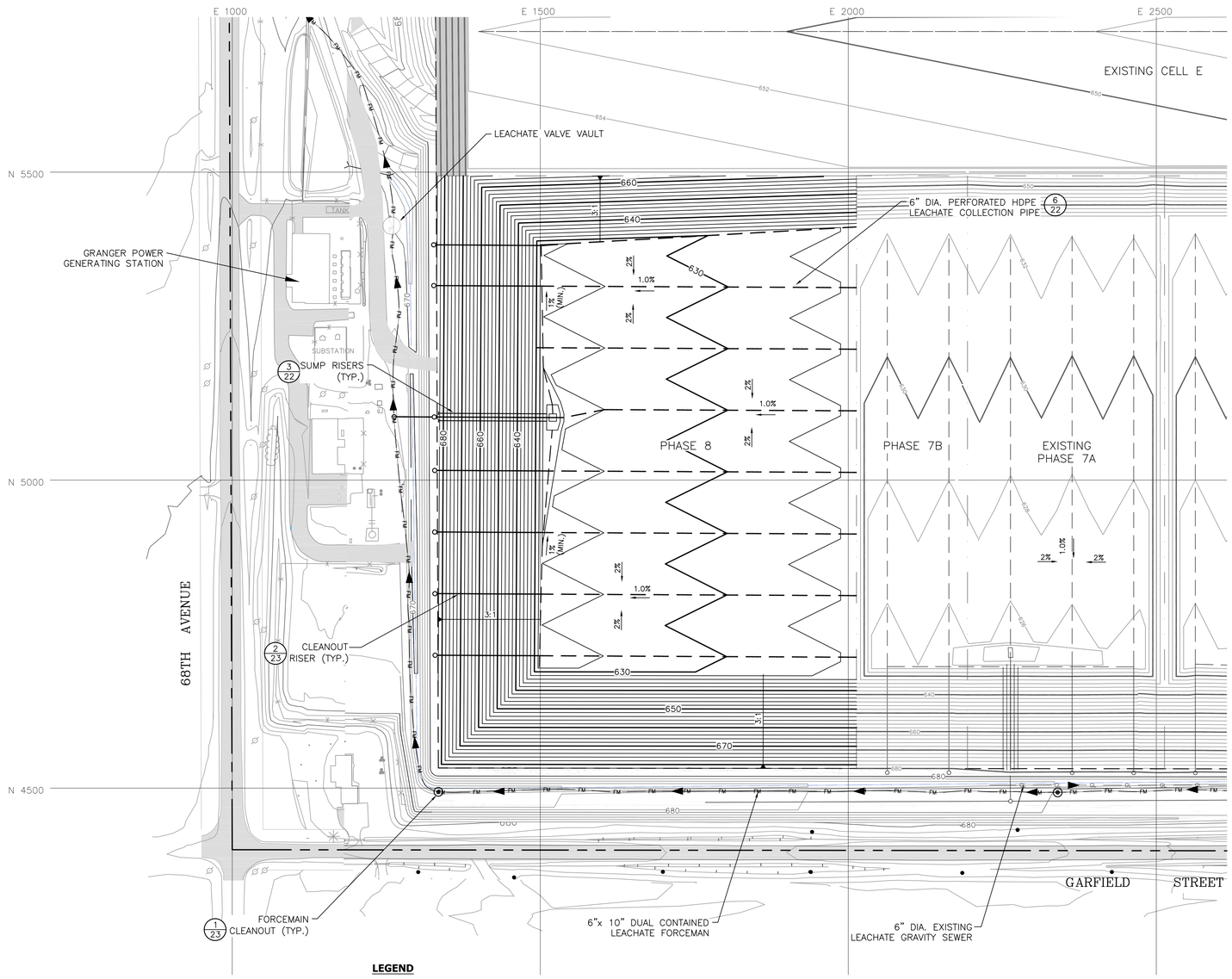

LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- 670 — EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- 670 — AS-BUILT TOP OF LINER SYSTEM CONTOUR (10 FT. INTERVAL) – SEE NOTE 2
- AS-BUILT TOP OF LINER CONTOUR (2 FT. INTERVAL) – SEE NOTE 2
- 670 — PROPOSED/FUTURE TOP OF LEACHATE COLLECTION SYSTEM CONTOUR (10 FT. INTERVAL)
- PROPOSED/FUTURE TOP OF LEACHATE COLLECTION SYSTEM CONTOUR (2 FT. INTERVAL)
- EXISTING LEACHATE COLLECTION PIPE
- PROPOSED LEACHATE COLLECTION PIPE
- FORCEMAIN CLEANOUT
- LEACHATE COLLECTION PIPE CLEANOUT RISER
- SUMP SIDESLOPE RISER
- FM — EXISTING FORCEMAIN
- GL — EXISTING GRAVITY LINE
- GL — PROPOSED/FUTURE GRAVITY LINE
- EXISTING UTILITY POLE

NOTES:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.
2. GRADES SHOWN FOR CELL A THROUGH E AND PHASES 1 THROUGH 7 ARE TOP OF LINER CONTOURS AND SHOWN FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT INTENDED TO SHOW AS-BUILT TOP OF LEACHATE COLLECTION SYSTEM CONTOURS.
3. PHASE 7A IS EXISTING AND 7B IS BEING CONSTRUCTED IN 2016.

PREPARED FOR:
REPUBLIC SERVICES
OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
TOP OF LEACHATE COLLECTION SYSTEM - PHASE 8
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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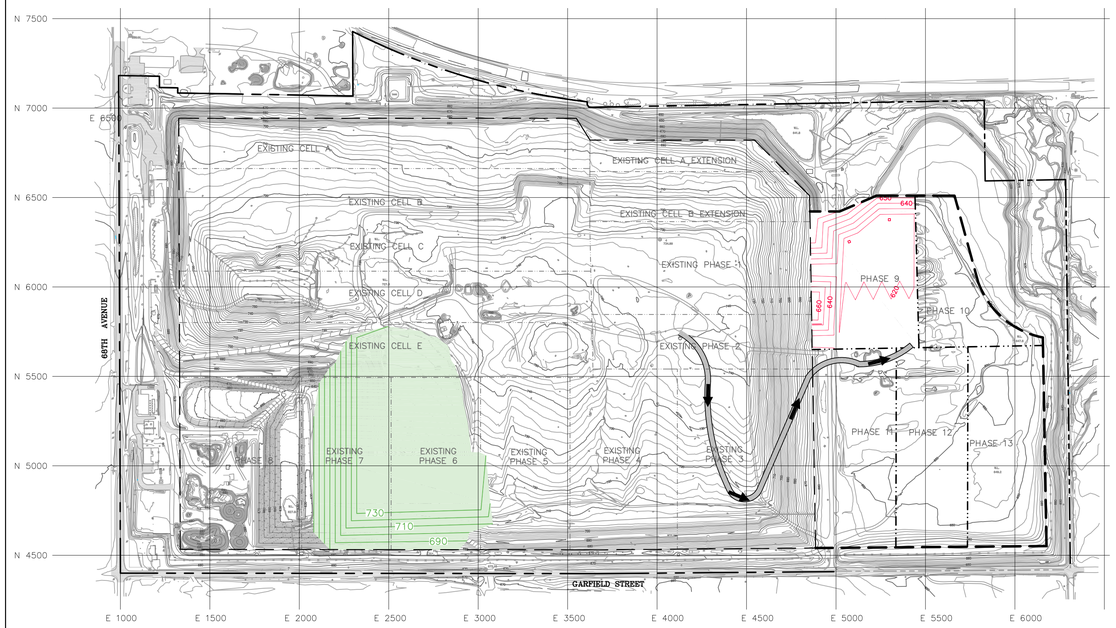
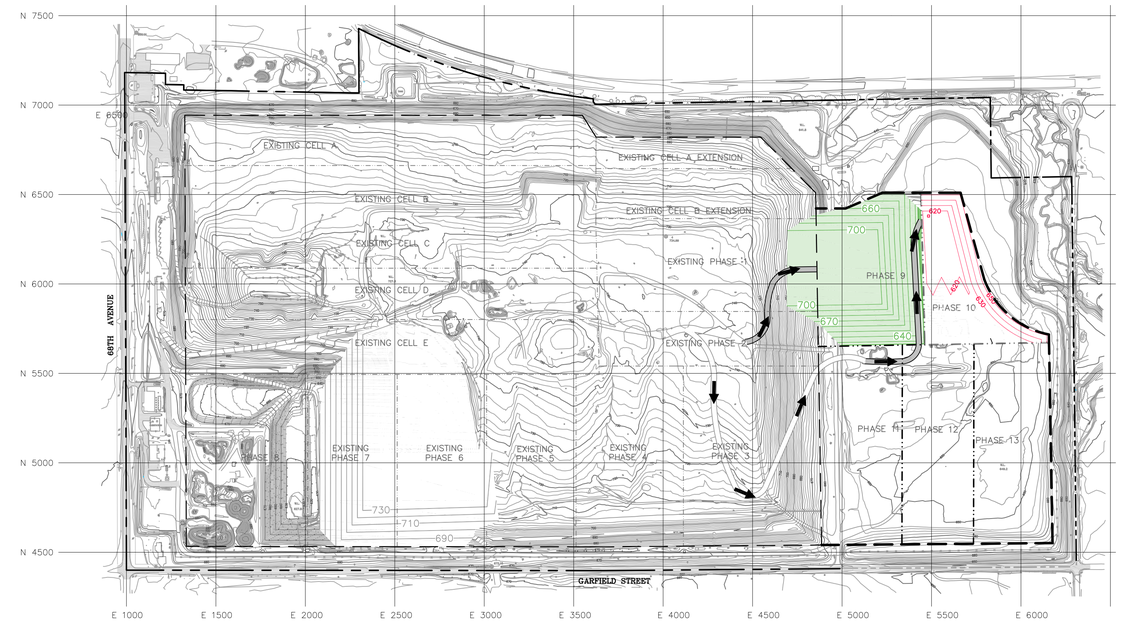
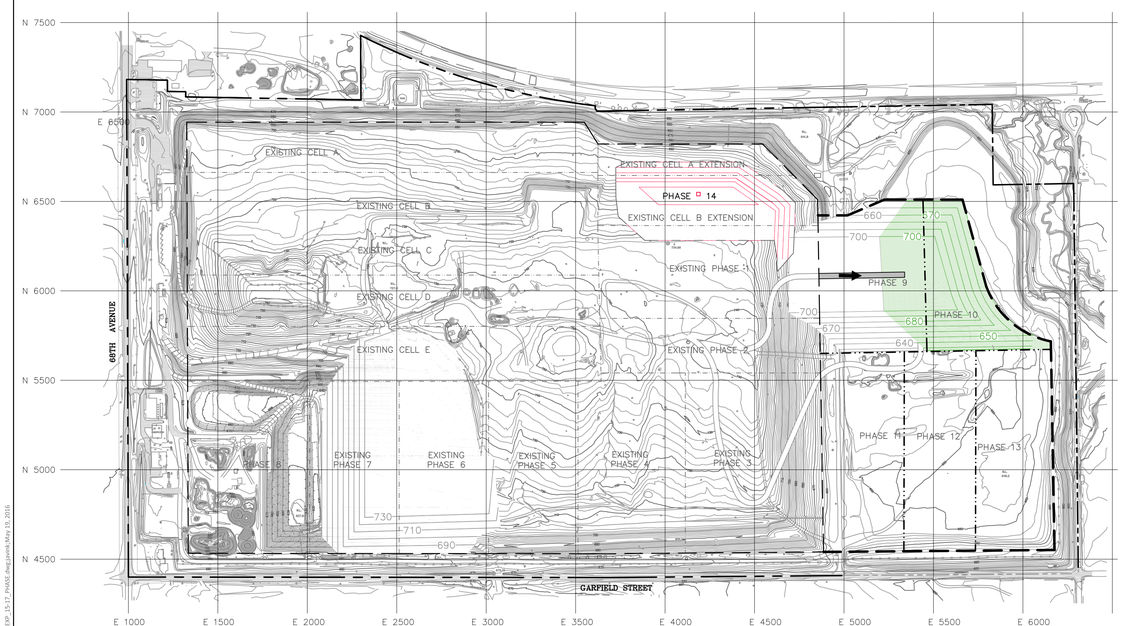


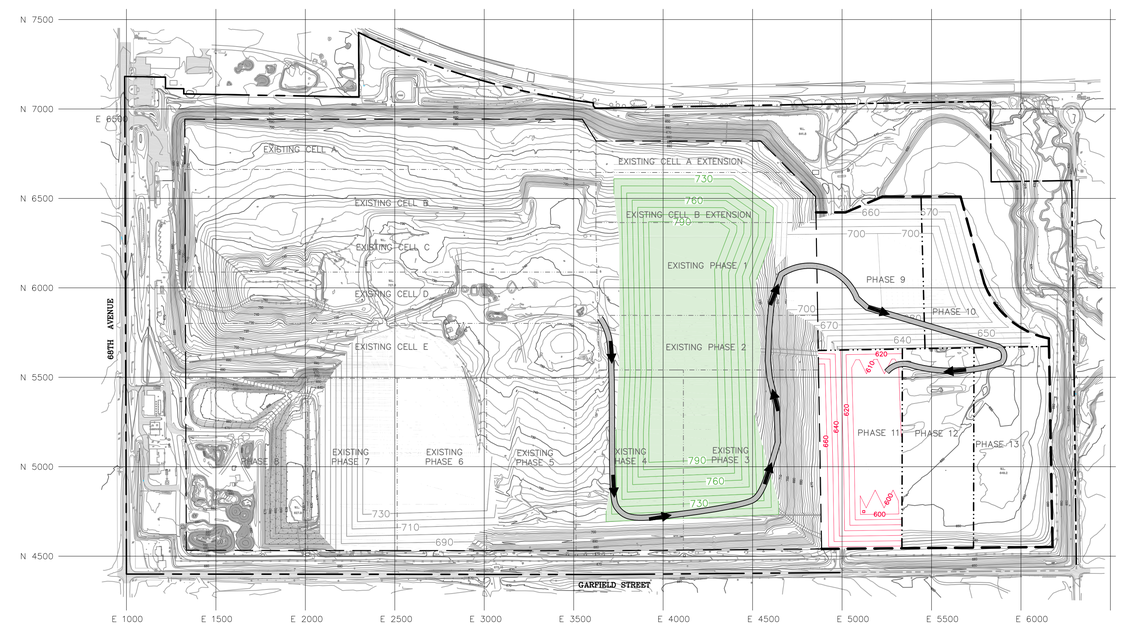
PHASE 9 CONSTRUCTION
(PHASE 7B AIRSPACE= 893,960 C.Y.)



PHASE 10 CONSTRUCTION
(PHASE 9 AIRSPACE= 879,000 C.Y.)



PHASE 14 CONSTRUCTION
(PHASE 10 AIRSPACE= 729,000 C.Y.)



PHASE 11 CONSTRUCTION
(PHASE 14 AIRSPACE= 2,106,000 C.Y.)

NOTE:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.
2. PHASE DEVELOPMENT PLAN IS CONCEPTUAL AND MAY BE MODIFIED BASED ON FUTURE OPERATIONAL NEEDS.
3. AIRSPACE IS INCREMENTAL FILL VOLUME WITH INTERIOR SLOPES AT 3:1 AND EXTERIOR SLOPES AT DESIGN TOP OF WASTE GRADES.

LEGEND

- PROPERTY LINE
- PERMIT SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- 670 — EXISTING CONTOUR (10 FT. INTERVAL)
- 670 — PROPOSED/FUTURE TOP OF WASTE CONTOUR (10 FT. INTERVAL)
- 630 — PROPOSED/FUTURE TOP OF LEACHATE COLLECTION SYSTEM CONTOUR (10 FT. INTERVAL)
- PROPOSED/FUTURE TOP OF WASTE PLACEMENT AREA
- PROPOSED ACCESS DIRECTION
- PROPOSED ACCESS ROAD

N

SCALE: 1" = 400'
0 200' 400' 800'

PREPARED FOR:
REPUBLIC SERVICES
OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
PHASE DEVELOPMENT PLAN- Sheet 1
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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600 ANN STREET N.W., SUITE 201A
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SHEET 15

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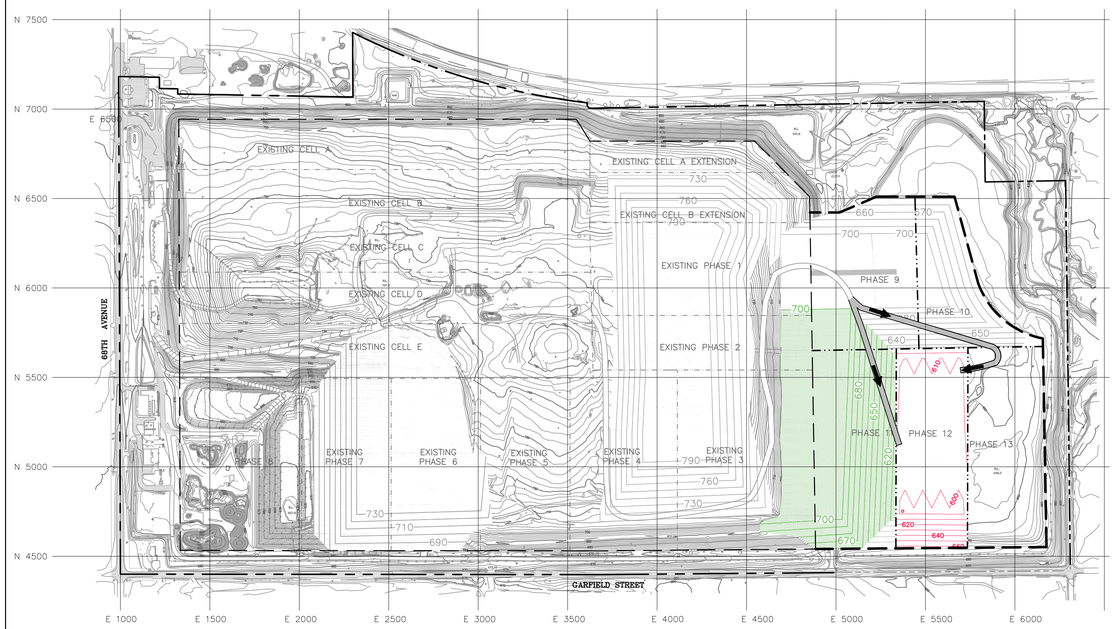
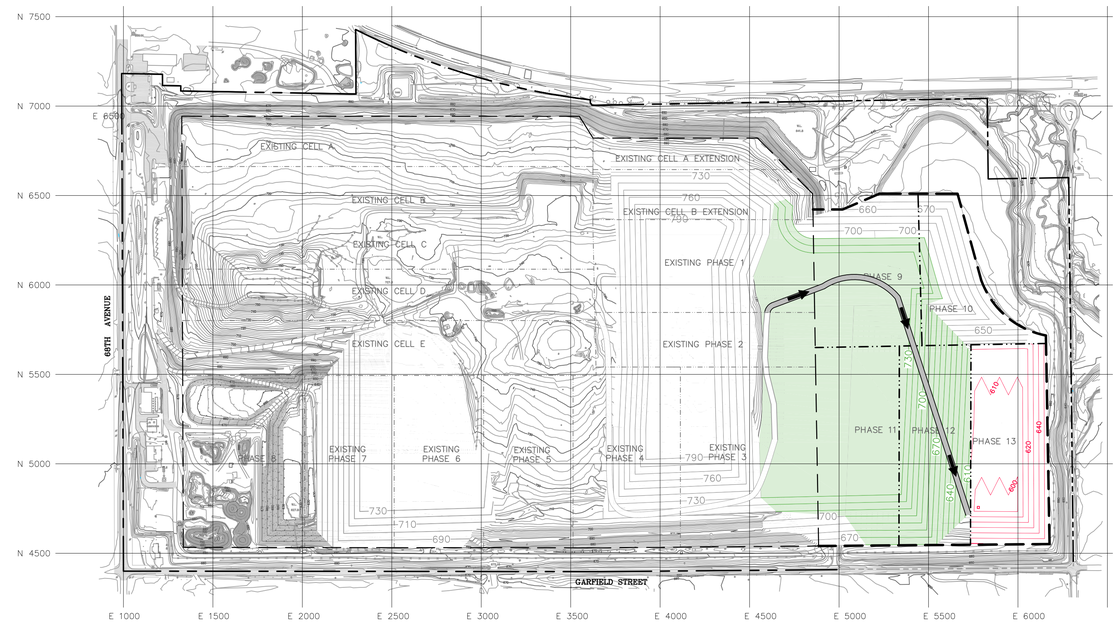
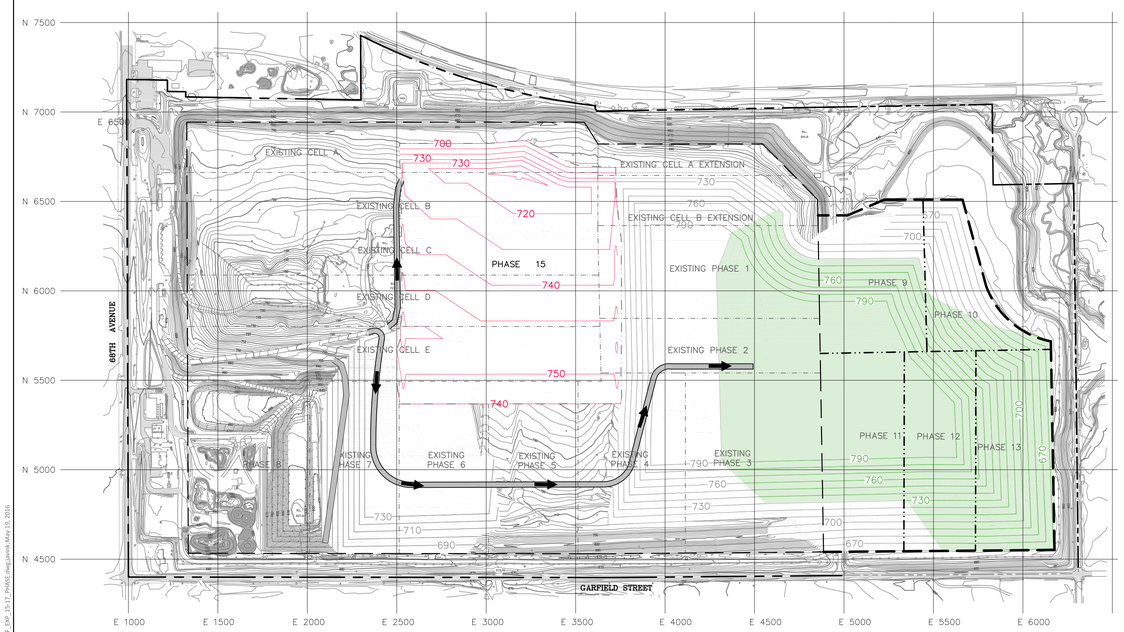


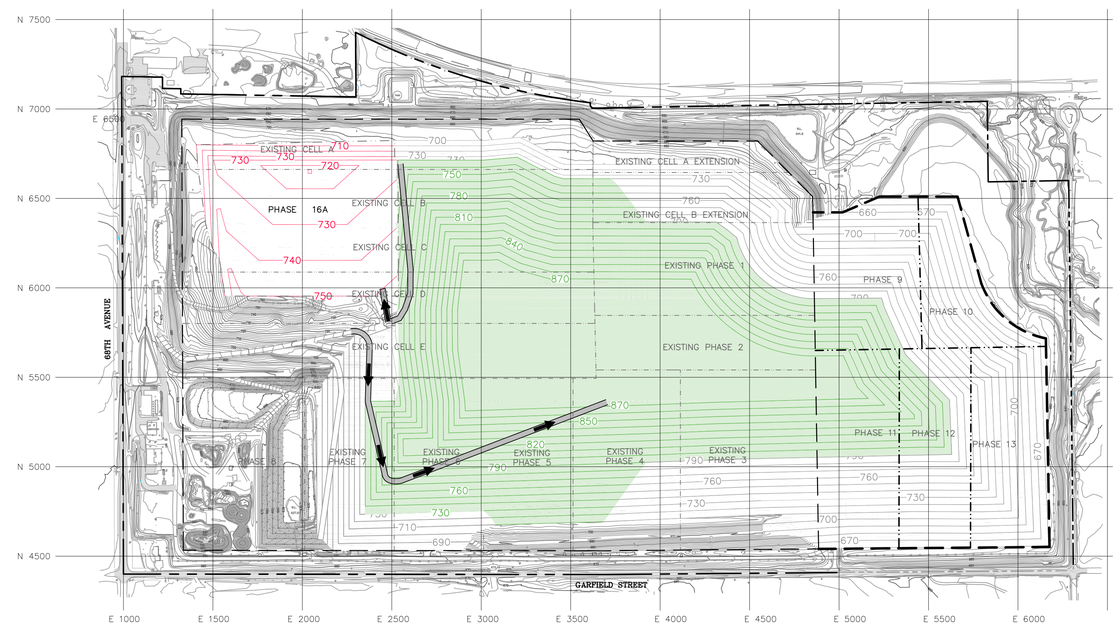
PHASE 12 CONSTRUCTION
(PHASE 11 AIRSPACE= 994,000 C.Y.)



PHASE 13 CONSTRUCTION
(PHASE 12 AIRSPACE= 3,241,000 C.Y.)



PHASE 15 CONSTRUCTION
(PHASE 13 AIRSPACE= 5,372,000 C.Y.)



PHASE 16A CONSTRUCTION
(PHASE 15 AIRSPACE= 11,099,000 C.Y.)

NOTE:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.
2. PHASE DEVELOPMENT PLAN IS CONCEPTUAL AND MAY BE MODIFIED BASED ON FUTURE OPERATIONAL NEEDS.
3. AIRSPACE IS INCREMENTAL FILL VOLUME WITH INTERIOR SLOPES AT 3:1 AND EXTERIOR SLOPES AT DESIGN TOP OF WASTE GRADES.

LEGEND

- PROPERTY LINE
- PERMIT SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- 870 — EXISTING CONTOUR (10 FT. INTERVAL)
- 670 — PROPOSED/FUTURE TOP OF WASTE CONTOUR (10 FT. INTERVAL)
- 630 — PROPOSED/FUTURE TOP OF LEACHATE COLLECTION SYSTEM CONTOUR (10 FT. INTERVAL)
- PROPOSED/FUTURE TOP OF WASTE PLACEMENT AREA
- PROPOSED ACCESS DIRECTION
- PROPOSED ACCESS ROAD

N

SCALE: 1" = 400'
0 200' 400' 800'

PREPARED FOR:
REPUBLIC SERVICES
OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
PHASE DEVELOPMENT PLAN- Sheet 2
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

WEAVER CONSULTANTS GROUP
400 ANN STREET N.W., SUITE 201A
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SHEET 16

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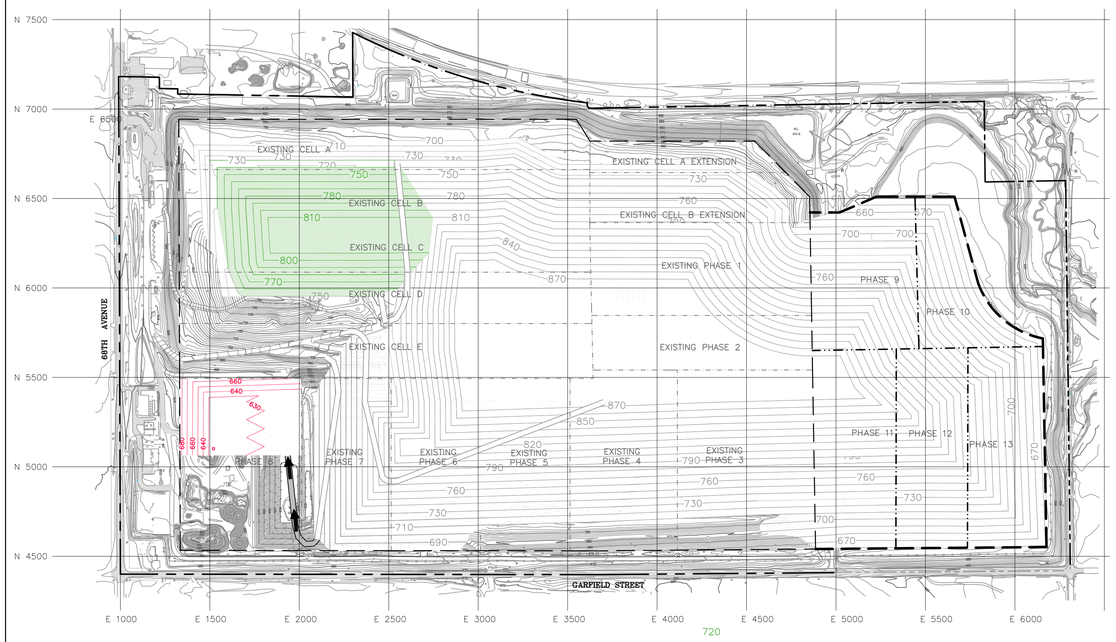
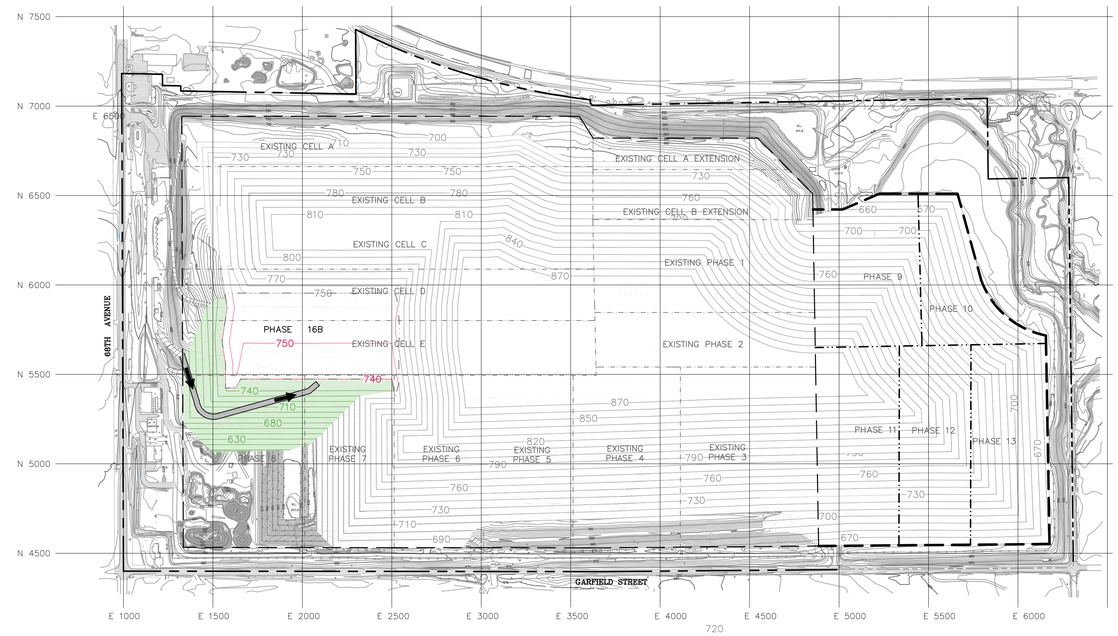
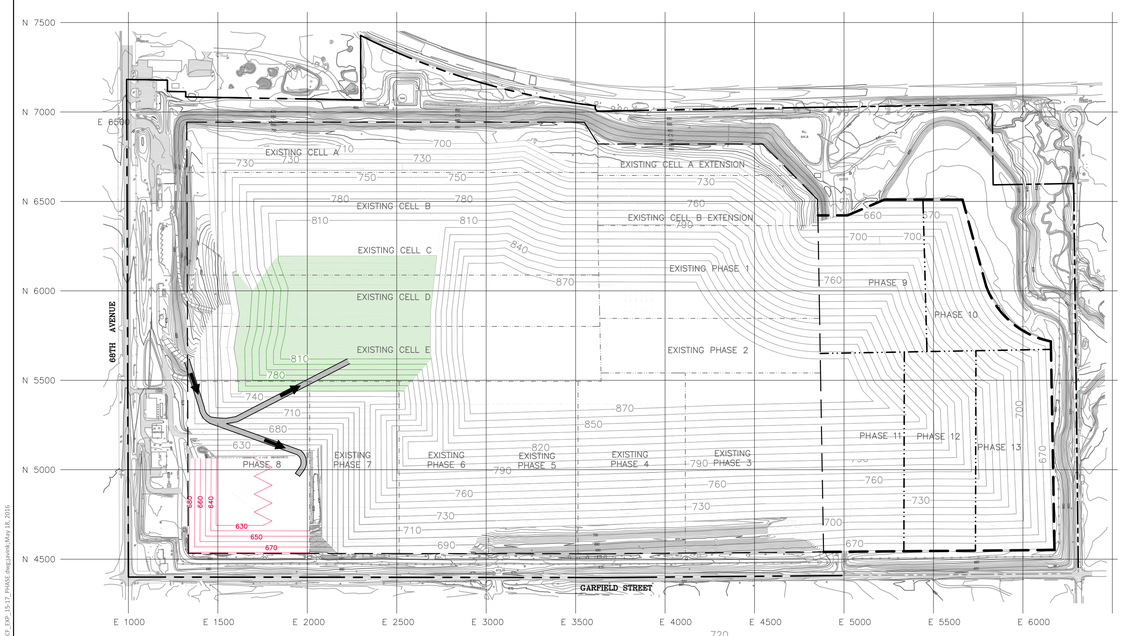


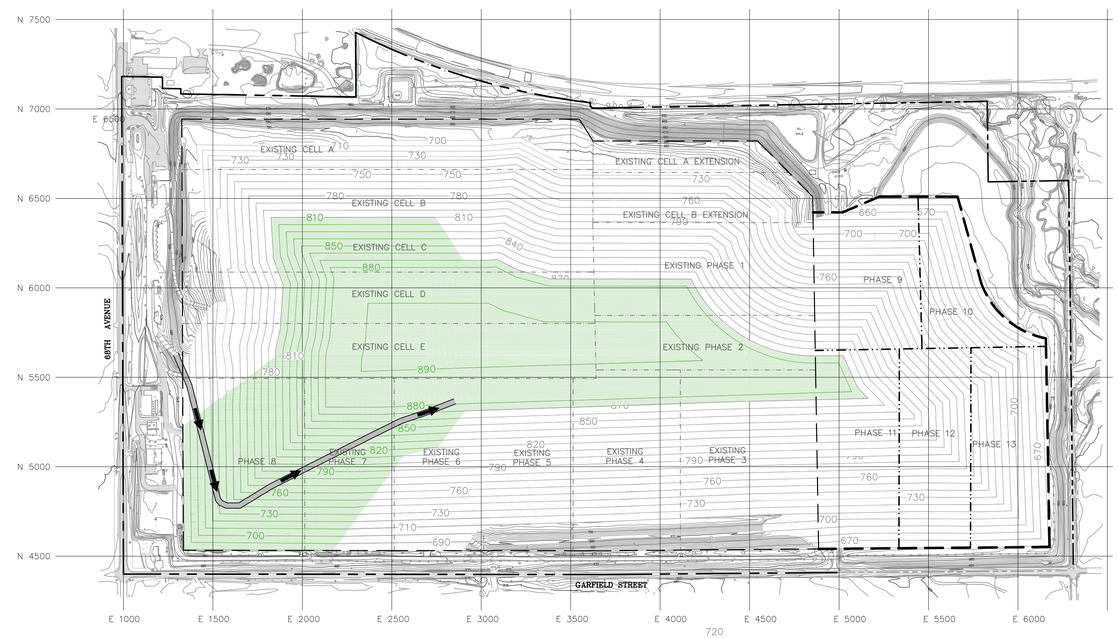
PHASE 8A CONSTRUCTION
(PHASE 16A AIRSPACE= 1,303,000 C.Y.)



PHASE 16B CONSTRUCTION
(PHASE 8A AIRSPACE= 603,000 C.Y.)



PHASE 8B CONSTRUCTION
(PHASE 16B AIRSPACE= 1,074,000 C.Y.)



PHASE 8B FILL
(REMAINING AIRSPACE= 5,803,000 C.Y.)

NOTE:

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3. AIRSPACE IS INCREMENTAL FILL VOLUME WITH INTERIOR SLOPES AT 3:1 AND EXTERIOR SLOPES AT DESIGN TOP OF WASTE GRADES.

LEGEND

- PROPERTY LINE
- PERMIT SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- 870 — EXISTING CONTOUR (10 FT. INTERVAL)
- 670 — PROPOSED/FUTURE TOP OF WASTE CONTOUR (10 FT. INTERVAL)
- 630 — PROPOSED/FUTURE TOP OF LEACHATE COLLECTION SYSTEM CONTOUR (10 FT. INTERVAL)
- PROPOSED/FUTURE TOP OF WASTE PLACEMENT AREA
- PROPOSED ACCESS DIRECTION
- PROPOSED ACCESS ROAD

N

SCALE: 1" = 400'
0 200' 400' 800'

PREPARED FOR:
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OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
PHASE DEVELOPMENT PLAN- Sheet 3
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

WEAVER CONSULTANTS GROUP
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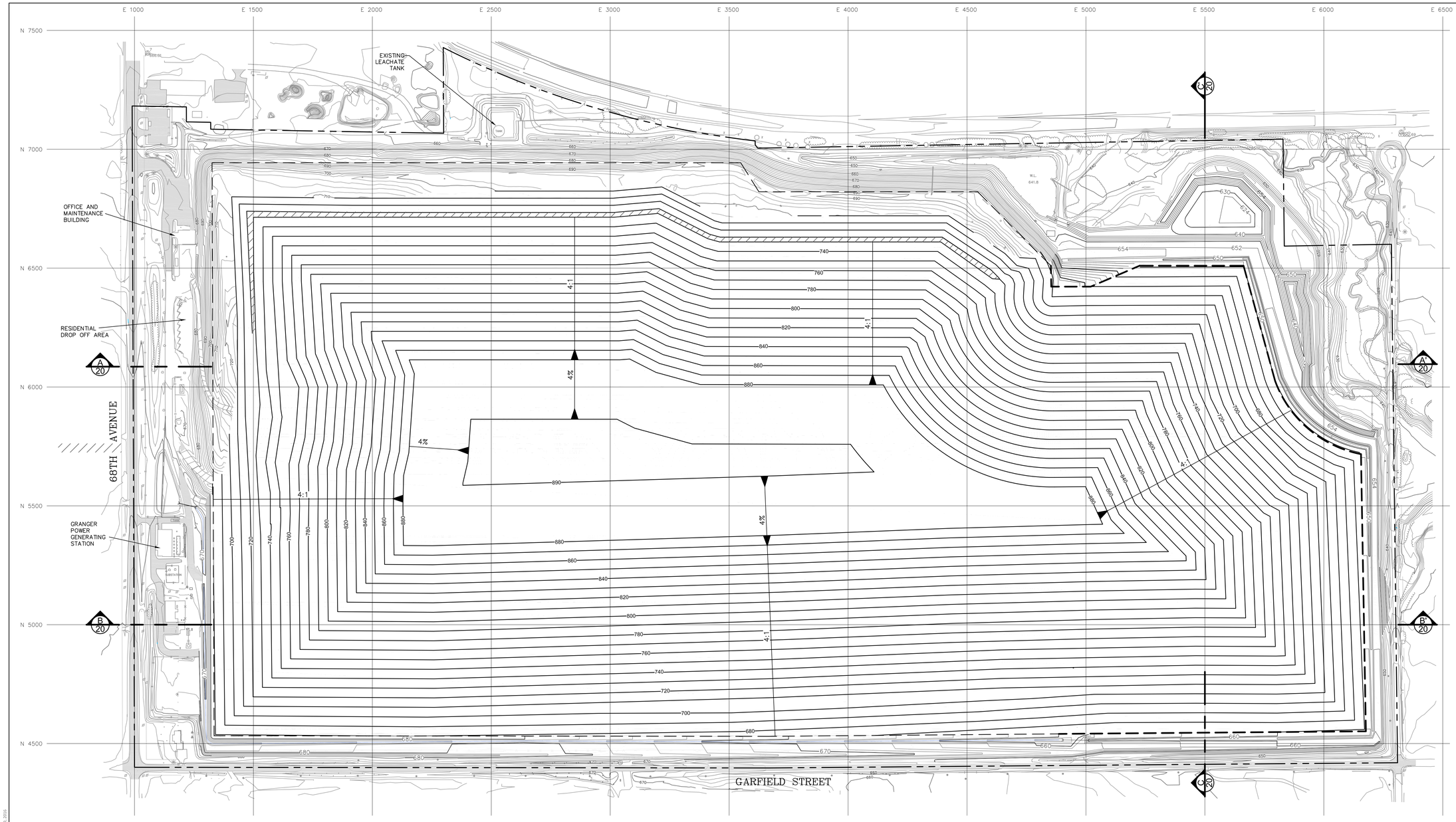

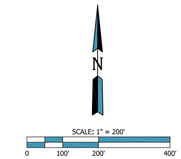

LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- 670 — EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- 670 — PROPOSED/FUTURE TOP OF WASTE CONTOUR (10 FT. INTERVAL)
- OVERLINER BERM

NOTE:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.
2. EROSION CONTROL BERMS AND CHANNELS ARE LOCATED ON THE FINAL COVER.

PREPARED FOR:

REPUBLIC SERVICES

OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION

OVERALL TOP OF WASTE GRADING PLAN

OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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SHEET 18

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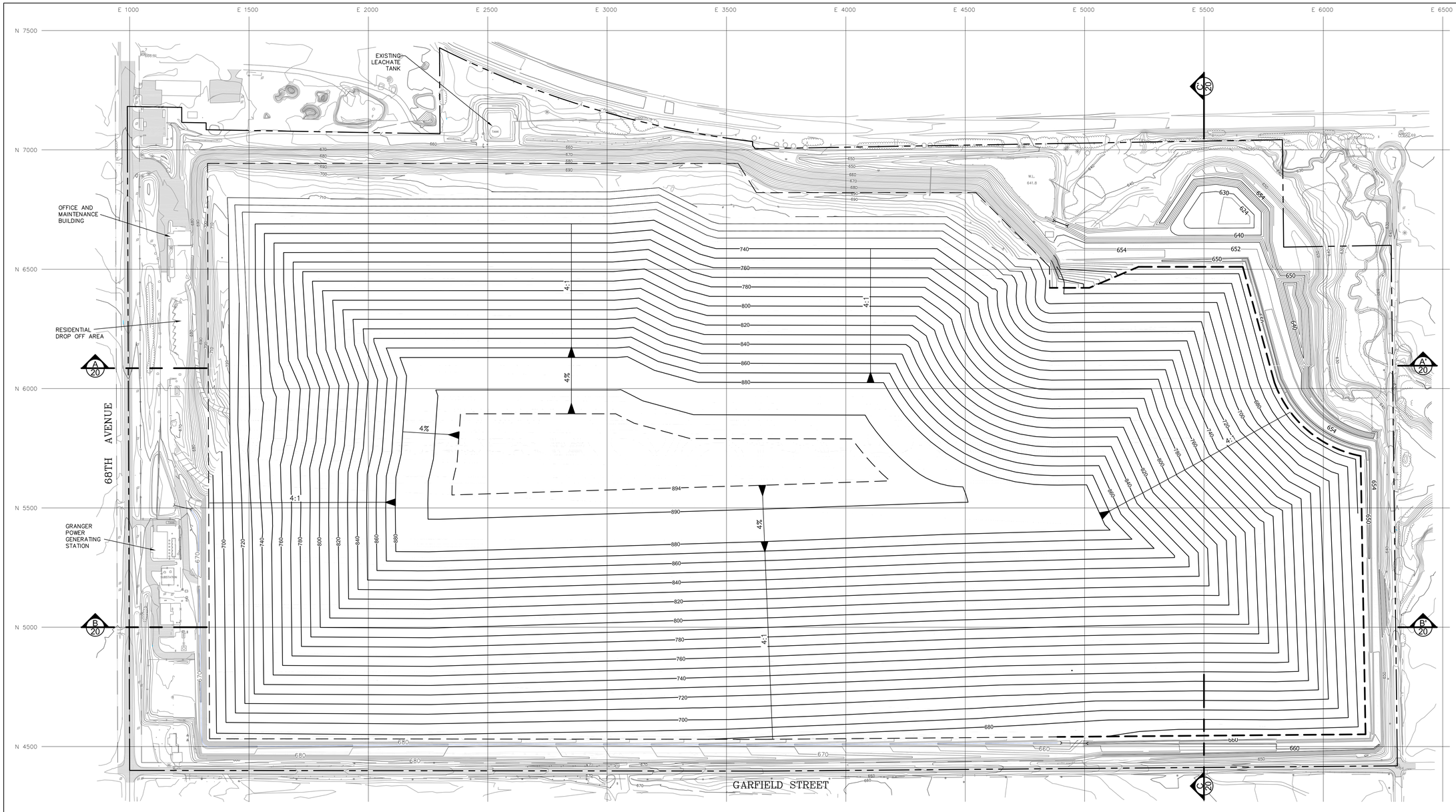

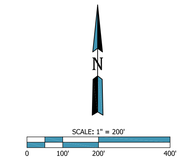

LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- 670 — EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- 670 — PROPOSED/FUTURE CONTOUR (10 FT. INTERVAL)
- PROPOSED/FUTURE CONTOUR (2 FT. INTERVAL)
- 670 — PROPOSED/FUTURE TOP OF FINAL COVER CONTOUR (10 FT. INTERVAL)

NOTE:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.
2. EROSION CONTROL BERMS AND CHANNELS NOT SHOWN FOR CLARITY.
3. SEE SHEET 29 FOR LAYOUT OF SURFACE WATER CONTROLS.

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15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION

OVERALL TOP OF FINAL COVER GRADING PLAN

OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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SHEET 19

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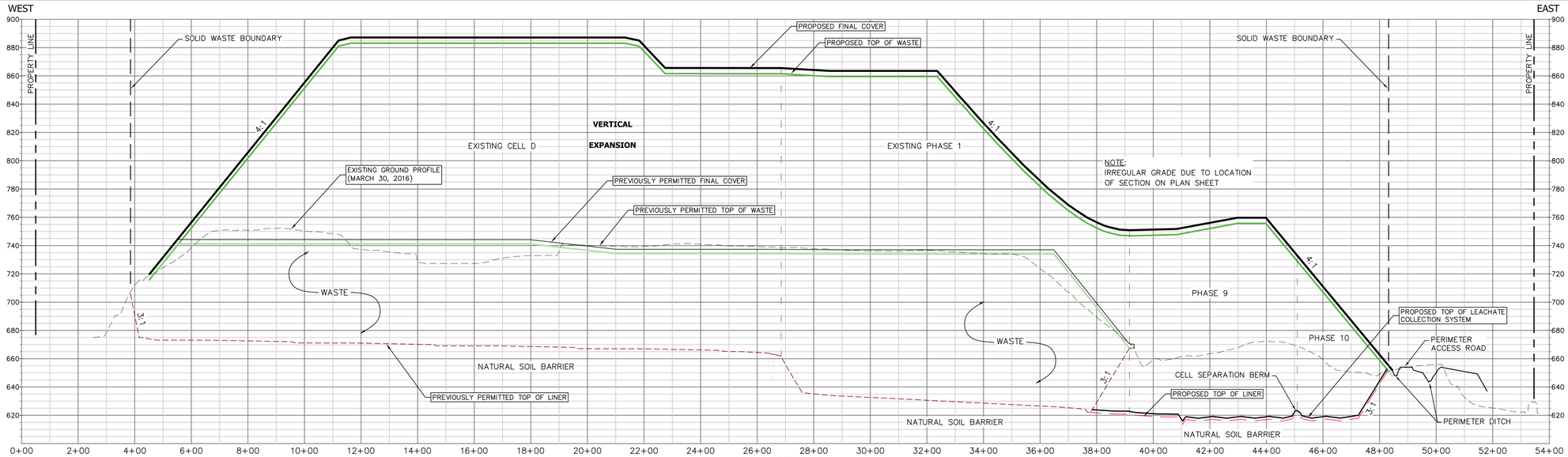
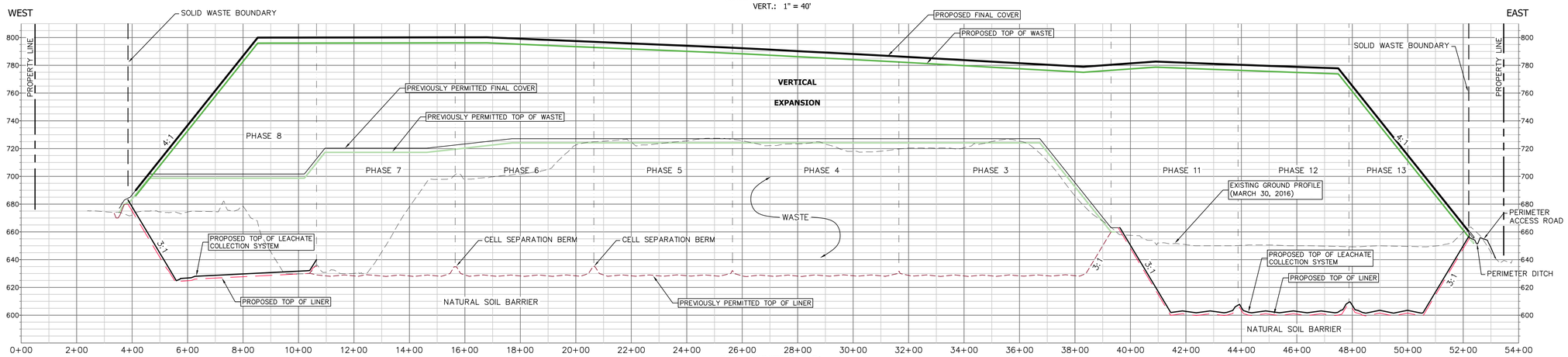
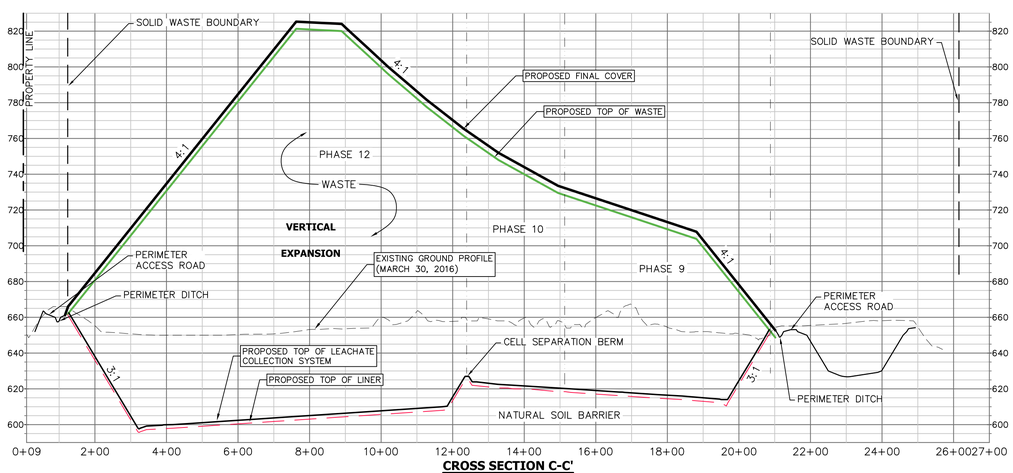


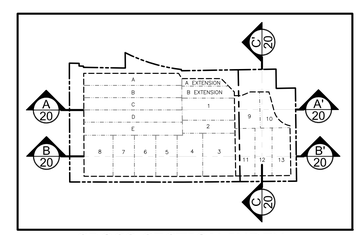
CROSS SECTION A-A'
SCALE: HORIZ.: 1" = 200'
VERT.: 1" = 40'



CROSS SECTION B-B'
SCALE: HORIZ.: 1" = 200'
VERT.: 1" = 40'



CROSS SECTION C-C'
SCALE: HORIZ.: 1" = 200'
VERT.: 1" = 40'



CROSS SECTION INDEX
NOT TO SCALE

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15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
LANDFILL CROSS SECTIONS
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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SHEET 20

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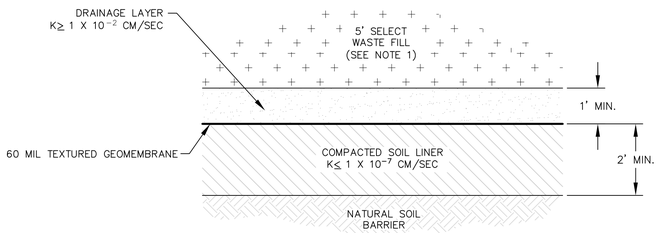


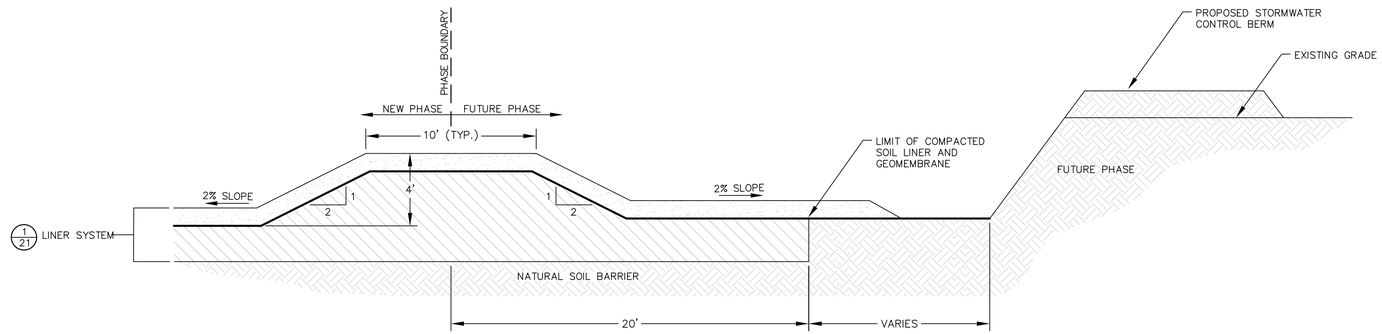
NOTES:

1. 2' THICK COMPACTED SOIL LINER MAY BE REPLACED WITH GCL.
2. 1' THICK LAYER OF PROTECTIVE COVER SOIL WITH HYDRAULIC CONDUCTIVITY OF 1.0 X 10^{-4} CM/SEC OR GREATER MAY BE PLACED OVER THE DRAINAGE LAYER IN PLACE OF 5 FT OF SELECT WASTE FILL.
3. DRAINAGE LAYER WITH HYDRAULIC CONDUCTIVITY OF 1.0 X 10^{-2} CM/SEC OR GREATER MAY BE REPLACED WITH DOUBLE-SIDED GEOCOMPOSITE WITH HYDRAULIC CONDUCTIVITY OF 1.0 CM/SEC OR GREATER AND 1' THICK DRAINAGE LAYER WITH HYDRAULIC CONDUCTIVITY OF 1.0 X 10^{-3} CM/SEC OR GREATER.

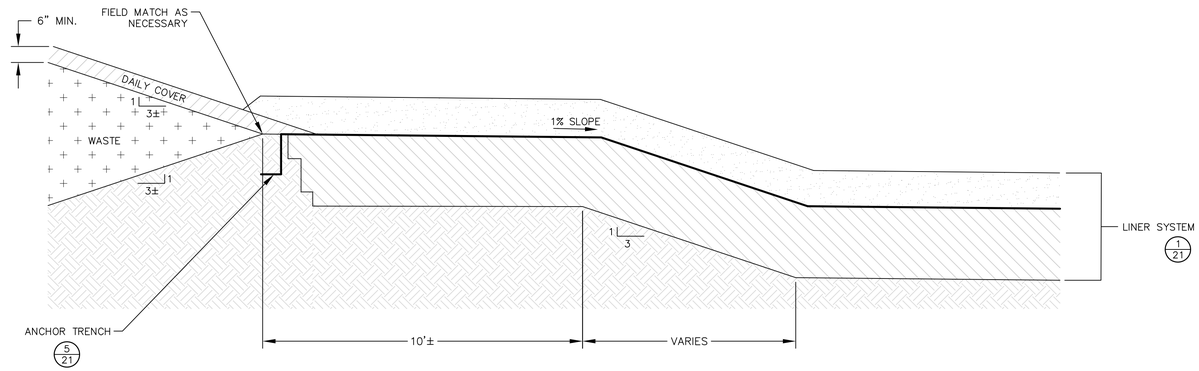
1/21 LINER SYSTEM
NOT TO SCALE

PREVIOUSLY CONSTRUCTED LINER SYSTEM SUMMARY				
PHASE	CONTRUCTED YEAR	TYPE OF BARRIER LAYER	60 MIL GEOMEMBRANE	DRAINAGE LAYER
A	1983	CLAY	N/A	12" SAND
B	1985	CLAY	N/A	12" SAND
C	1987	CLAY	N/A	12" SAND
D	1989	CLAY	N/A	12" SAND
E	1993	CLAY	N/A	12" SAND
A-EXT	1995	CLAY	N/A	12" SAND
B-EXT	1995	CLAY	N/A	12" SAND
1A	1997	GCL	HDPE SMOOTH	6 & 16 oz GEOTEXTILE WITH 12" SAND
1B	1998	GCL	HDPE SMOOTH	6 & 16 oz GEOTEXTILE WITH 12" SAND
2	1999	GCL	HDPE SMOOTH	6 & 16 oz GEOTEXTILE WITH 12" SAND
3	2001	GCL	HDPE SMOOTH	12" SAND
4A	2003	GCL	HDPE SMOOTH	6 & 16 oz GEOTEXTILE WITH 12" SAND
4B	2005	GCL	FLOOR-HDPE SMOOTH/SLOPE- TEXT	6oz GEOTEXTILE, HDPE GEOGRID WITH 12" SAND
5A	2006	GCL	FLOOR-HDPE SMOOTH/SLOPE- TEXT	6oz GEOTEXTILE, HDPE GEOGRID WITH 12" SAND
5B	2007	GCL	FLOOR-HDPE SMOOTH/SLOPE- TEXT	6oz GEOTEXTILE, HDPE GEOGRID WITH 12" SAND
6A	2010	GCL	TEXTURED	6oz GEOTEXTILE WITH 12" SAND
6B	2012	GCL	TEXTURED	6oz GEOTEXTILE WITH 12" SAND
7A	2013	GCL	TEXTURED	6oz GEOTEXTILE WITH 12" SAND

Notes: 1. A 5' select waste fill layer was utilized above the drainage layer in all phases.
2. Phase construction info based on available information and conclusions based on data review. For informational purposes only.



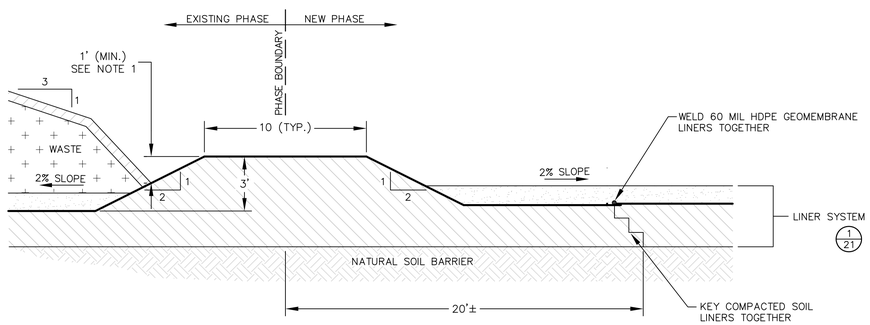
2/21 SEPARATION BERM PRIOR TO SUBSEQUENT PHASE CONSTRUCTION
SCALE: 1" = 4'



NOTES:

1. UNLINED PRE-SUBTITLE D AREAS INCLUDE CELLS A THROUGH E.
2. LINED PHASES INCLUDE PHASES 1 THROUGH 13 AND THE OVERLINER.

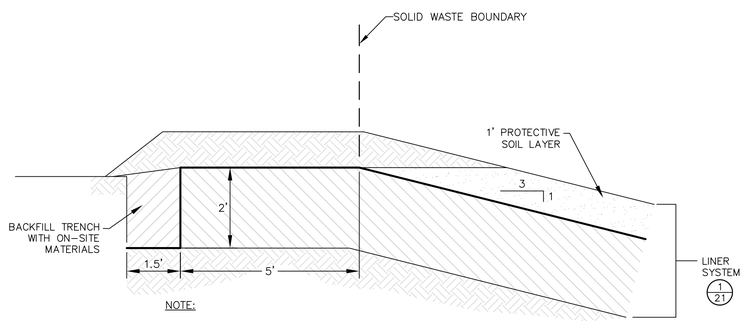
3/21 TIE-IN BETWEEN LINED AND UNLINED PHASES
NOT TO SCALE



NOTES:

1. MAINTAIN MINIMUM 1 FT. DEPTH TO MANAGE STORMWATER RUNOFF FOR 2YR- 30 MIN. RAIN EVENT FROM INTERMEDIATE SLOPE.

4/21 SEPARATION BERM TIE-IN FOLLOWING SUBSEQUENT PHASE CONSTRUCTION
SCALE: 1" = 4'



NOTE:

1. ALTERNATE ANCHOR TRENCH OPTIONS MAY BE USED AS LONG AS LIMITS OF WASTE ARE NOT INCREASED.

5/21 LINER SYSTEM ANCHOR TRENCH DETAIL
NOT TO SCALE

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OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
LINER SYSTEM DETAILS
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

WEAVER CONSULTANTS GROUP
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SHEET 21

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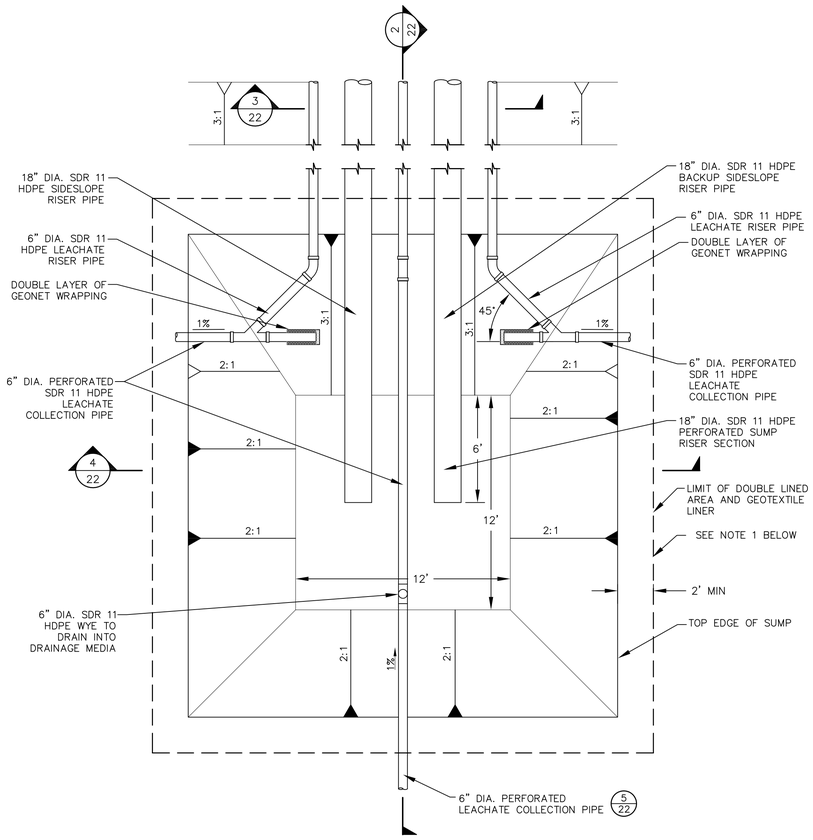
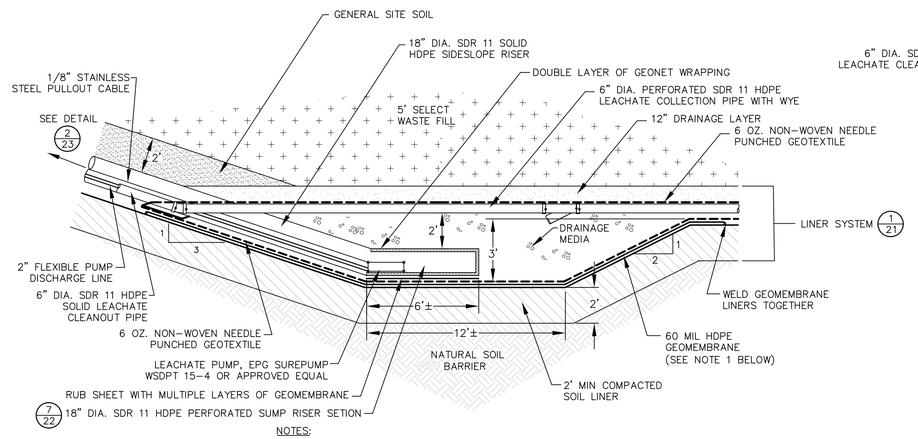


NOTES:

1. TYPICAL SUMP DIMENSIONS FOR CELLS A THRU E AND PHASE 1 THRU 7 ARE NOMINALLY 8 FT. BY 10 FT. AT THE BASE.
2. SUMP DIMENSIONS FOR PHASES 8 THRU 16 WILL BE NOMINALLY 12 FT. X 12 FT. AT THE BASE.

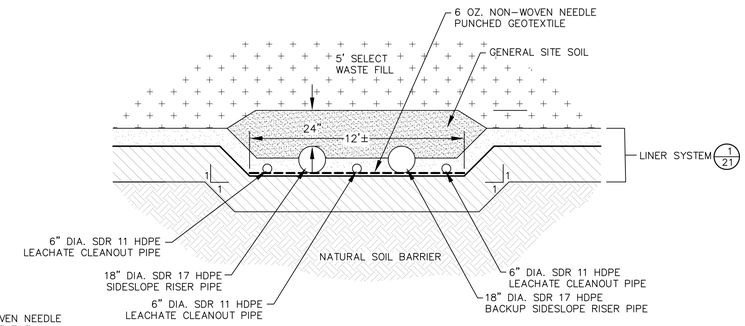
1/22 LEACHATE COLLECTION SUMP PLAN
SCALE: 1" = 4'



NOTES:

1. SUMP AREA TO BE DOUBLE LINED WITH 60 MIL HDPE GEOMEMBRANE WELDED TOGETHER AT PERIMETER.
2. IF GCL IS USED IN PLACE OF 2 FT. COMPACTED SOIL LINER, TWO LAYERS OF GCL WILL BE USED BENEATH THE SUMPS.
3. SOME LINES ARE EXAGGERATED FOR CLARITY AND MAY NOT MATCH SCALE.

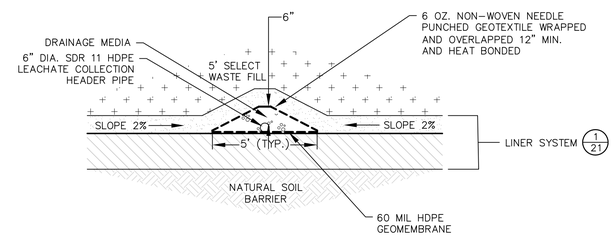
2/22 LEACHATE COLLECTION SUMP
NOT TO SCALE



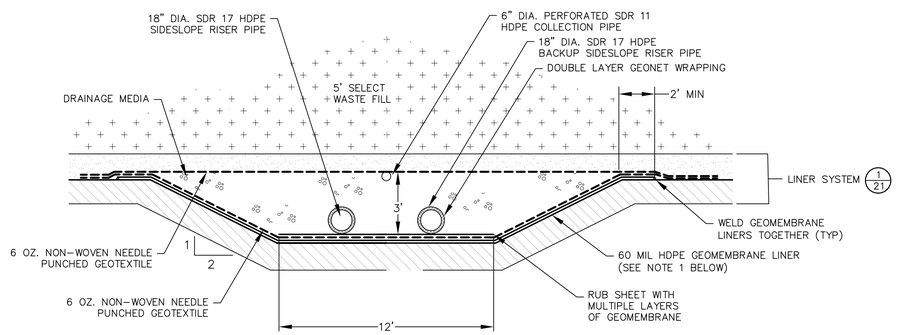
NOTES:

1. SET LEACHATE COLLECTION SUMP RISERS IN MINIMUM 1.5 FT. DEEP TRENCH UP THE SIDESLOPE.

3/22 SIDESLOPE RISER AND CLEANOUT
NOT TO SCALE



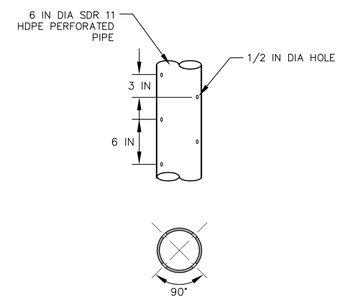
5/22 LEACHATE COLLECTION
NOT TO SCALE



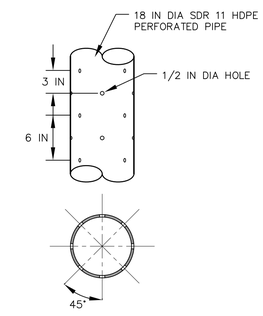
NOTES:

1. SUMP AREA TO BE DOUBLE LINED WITH 60 MIL HDPE GEOMEMBRANE WELDED TOGETHER AT PERIMETER.
2. IF GCL IS USED IN PLACE OF 2 FT. COMPACTED SOIL LINER, TWO LAYERS OF GCL WILL BE USED BENEATH THE SUMPS.
3. SOME LINES ARE EXAGGERATED FOR CLARITY AND MAY NOT MATCH SCALE.

4/22 LEACHATE COLLECTION SUMP
NOT TO SCALE



6/22 PERFORATED LEACHATE COLLECTION PIPE DETAIL (TYP.)
NOT TO SCALE



7/22 PERFORATED SIDESLOPE RISER COLLECTION PIPE DETAIL
NOT TO SCALE

PREPARED FOR:
REPUBLIC SERVICES
OTTAWA COUNTY LANDFILL, INC. 15550 68TH AVE. COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
LEACHATE COLLECTION SYSTEM DETAILS (Sheet 1)
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

WEAVER CONSULTANTS GROUP
400 ANN STREET N.W., SUITE 201A
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CAD: OCF_EXP_22_LCS_DET1

SHEET 22

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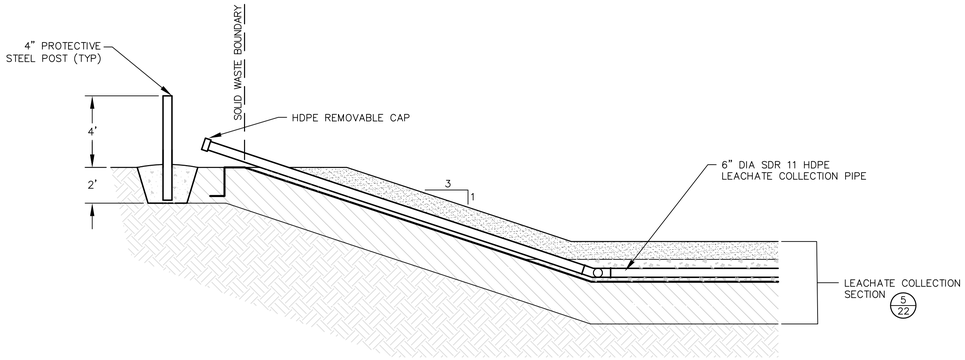
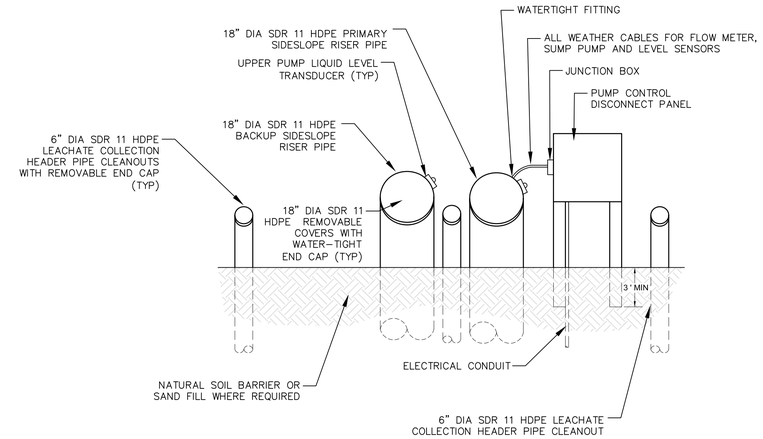


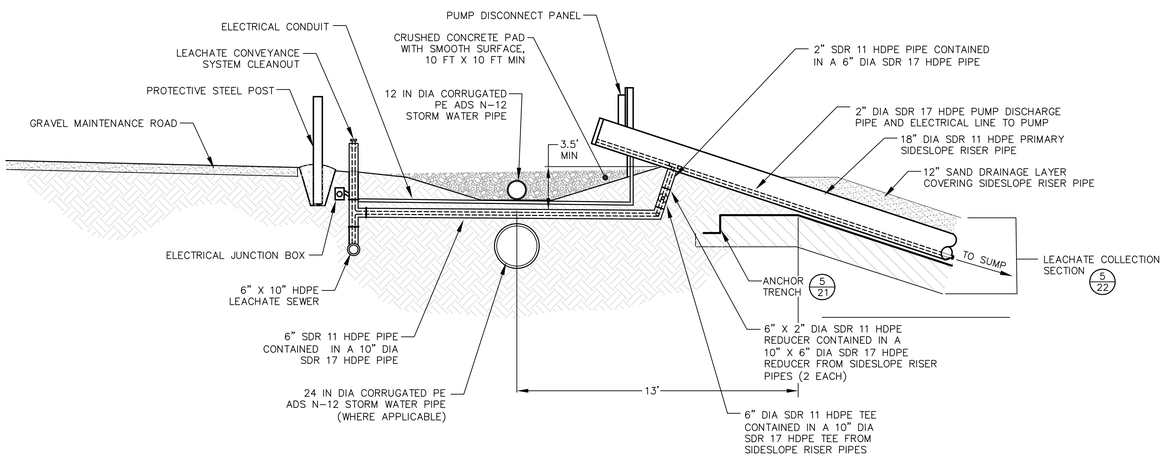
NOTE:

1. EXTEND CLEANOUT RISER DURING FINAL COVER CONSTRUCTION AND BOOT THROUGH FINAL COVER GEOMEMBRANE.

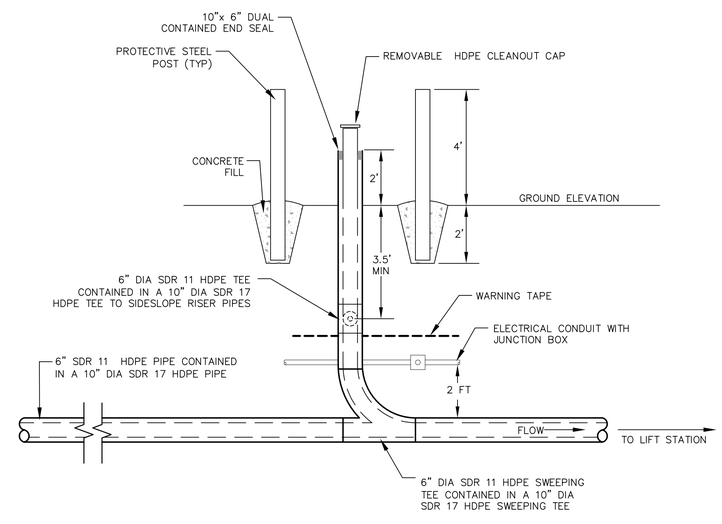
1/23 TYPICAL SIDESLOPE LEACHATE CLEANOUT (TYP.)
NOT TO SCALE



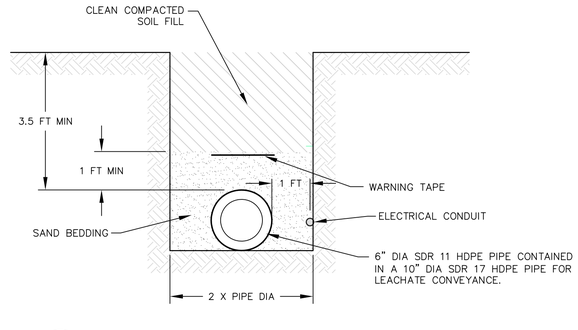
2/23 SIDESLOPE RISER SECTION
NOT TO SCALE



3/23 SIDESLOPE RISER SYSTEM
NOT TO SCALE



4/23 LEACHATE CONEYANCE SYSTEM
NOT TO SCALE



5/23 LEACHATE CONVEYANCE PIPE TRENCH DETAIIL
NOT TO SCALE

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LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
LEACHATE COLLECTION SYSTEM DETAILS (Sheet 2)
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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SHEET 23

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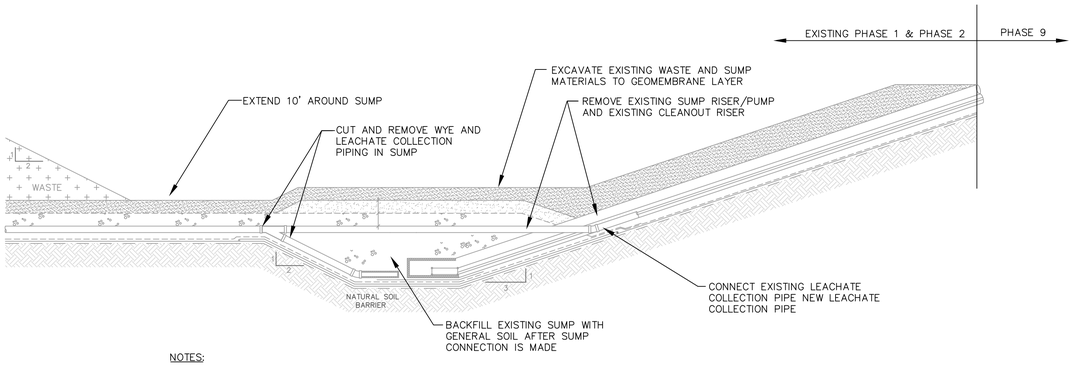
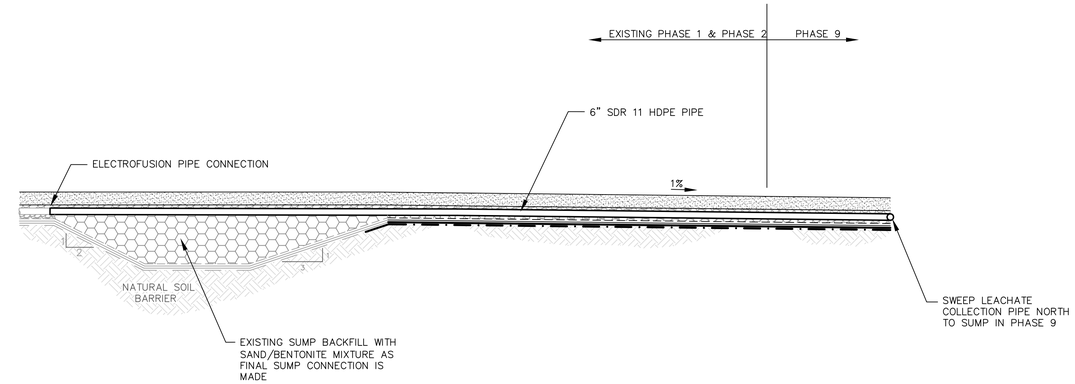


NOTES:

1. AT PHASE 1 AND PHASE 2 SUMP LOCATIONS, EXCAVATE EXISTING WASTE AT 2:1 SLOPES AND ABANDON EXISTING SUMP RISERS AND PUMP. TIE-IN TO PHASE 9 LEACHATE COLLECTION SYSTEM.

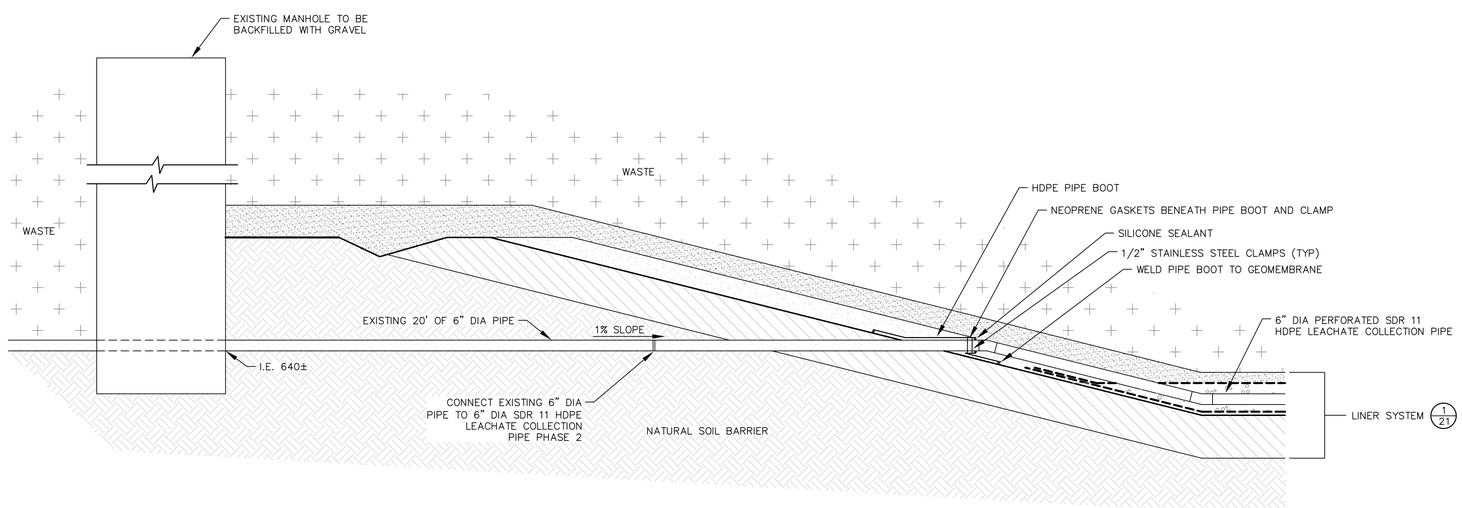
1/24 PHASE 1 & PHASE 2 SUMP AFTER WASTE EXCAVATION
NO SCALE



NOTES:

1. AT PHASE 1 AND PHASE 2 SUMP LOCATIONS, EXCAVATE EXISTING WASTE AT 2:1 SLOPES AND ABANDON EXISTING SUMP RISERS AND PUMP. TIE-IN TO PHASE 9 LEACHATE COLLECTION SYSTEM.
2. REFER TO SUMP CONNECTION CONSTRUCTION PLAN IN ATTACHMENT 11 FOR SEQUENCE.

2/24 COMPLETED SUMP TIE-IN CONNECTIONS AT PHASE 1 & PHASE 2
SCALE: 1" = 4'



3/24 CROSS SECTION OF LEACHATE COLLECTION SYSTEM CONNECTION BETWEEN UNLINED CELLS AND EXISTING PHASES
NOT TO SCALE

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OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
LEACHATE COLLECTION SYSTEM DETAILS (Sheet 3)
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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SHEET 24

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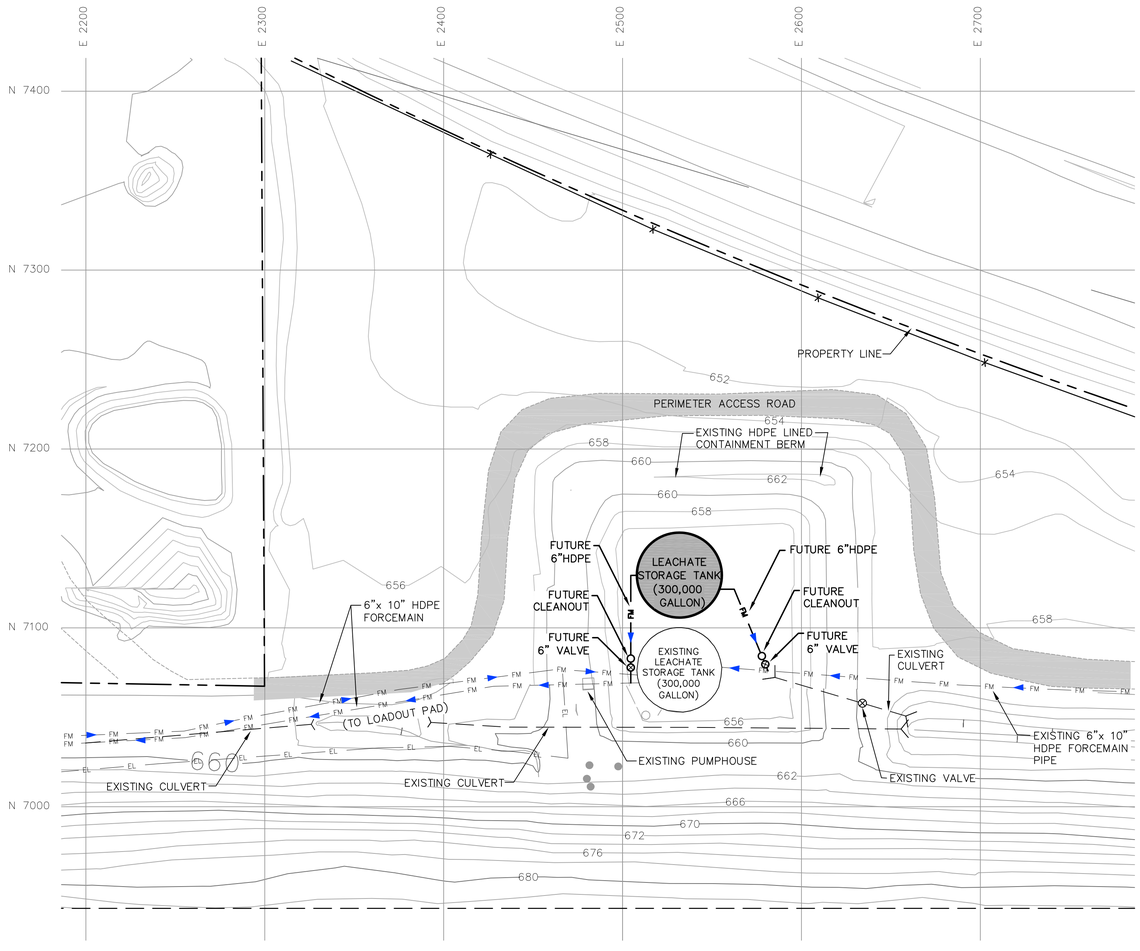
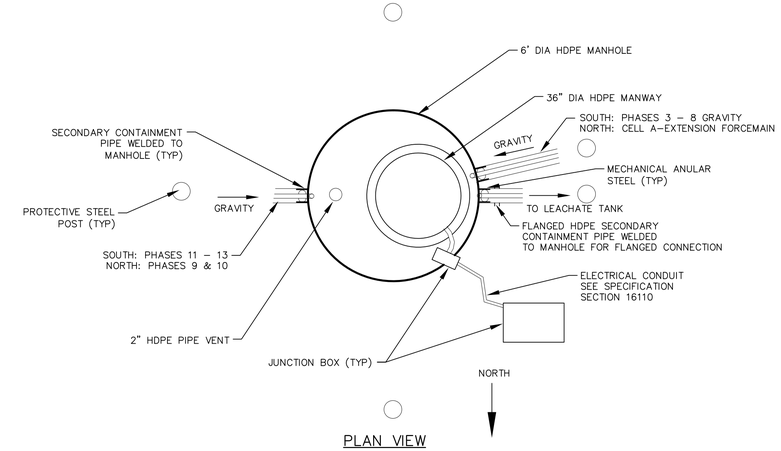
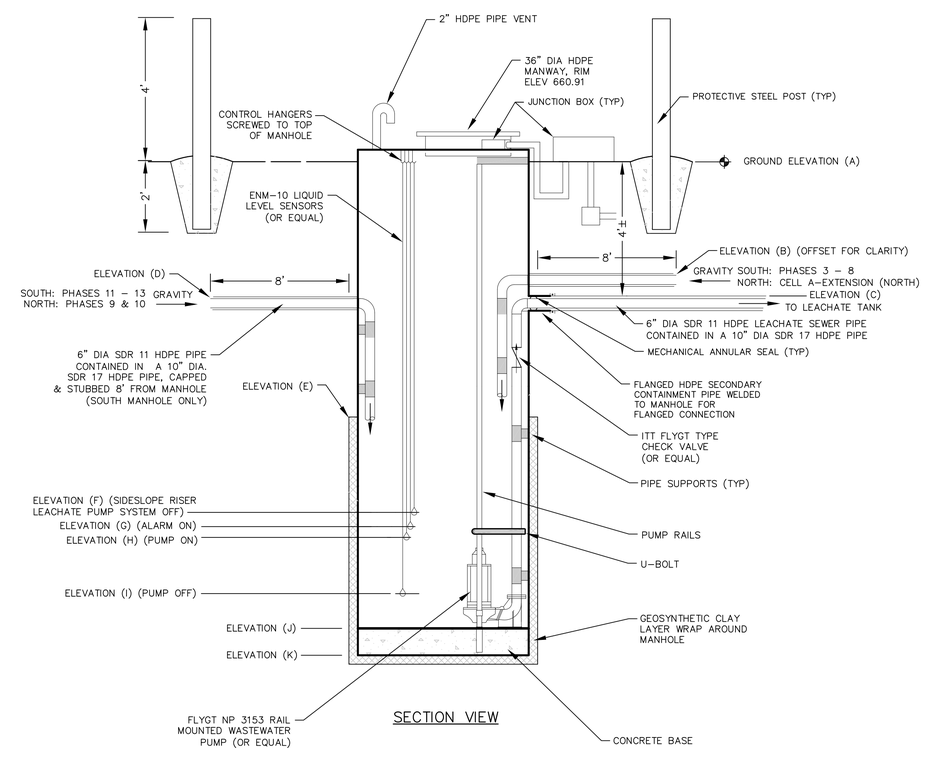




PLAN VIEW



SECTION VIEW

	ELEVATION										
	A	B	C	D	E	F	G	H	I	J	K
NORTH LIFT STATION	652	645.3	645.3	645.3	634	647.08	645.08	641.16	636.74	629	628
SOUTH LIFT STATION	658	653.75	653.75	653.75	640	653.08	651.08	647.16	642.74	635	634

1/25 NORTH & SOUTH LIFT STATION
NOT TO SCALE

N

SCALE: 1" = 40'
0 20' 40' 80'

LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- 670 EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- EL EXISTING ELECTRIC LINE
- FM EXISTING FORCEMAIN
- FM PROPOSED FORCEMAIN

NOTE:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016 AND ADAPTED FROM EES LEACHATE TANK CONSTRUCTION PLAN.
2. FUTURE LEACHATE STORAGE TANK TO BE ADDED AS NEEDED UNLESS OTHER DISPOSAL OPTIONS BECOME AVAILABLE, SUCH AS DIRECT SEWER CONNECTION.

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15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
LEACHATE STORAGE FACILITY
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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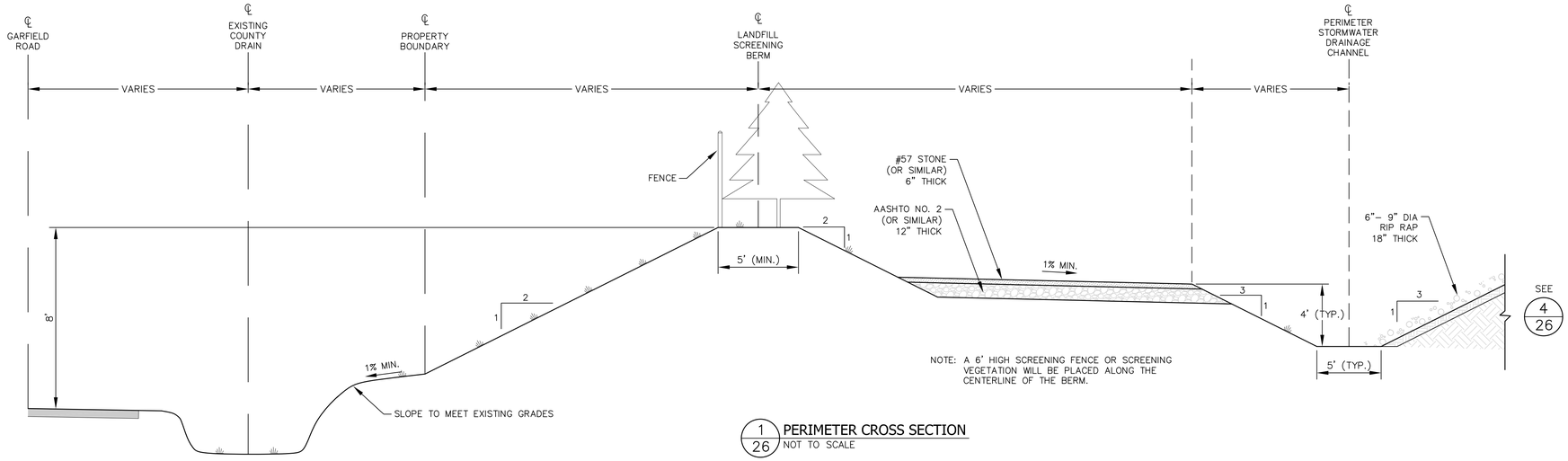
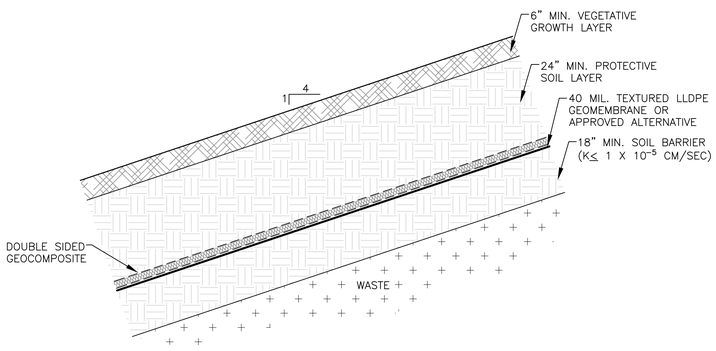
SHEET 25



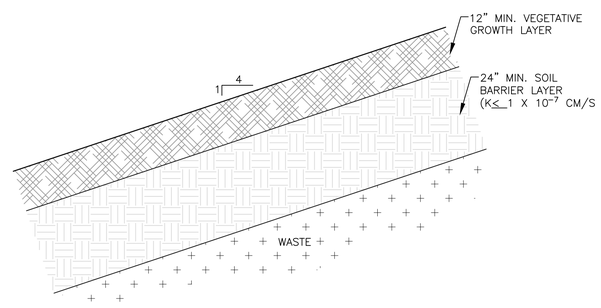
1 / 26 PERIMETER CROSS SECTION
NOT TO SCALE



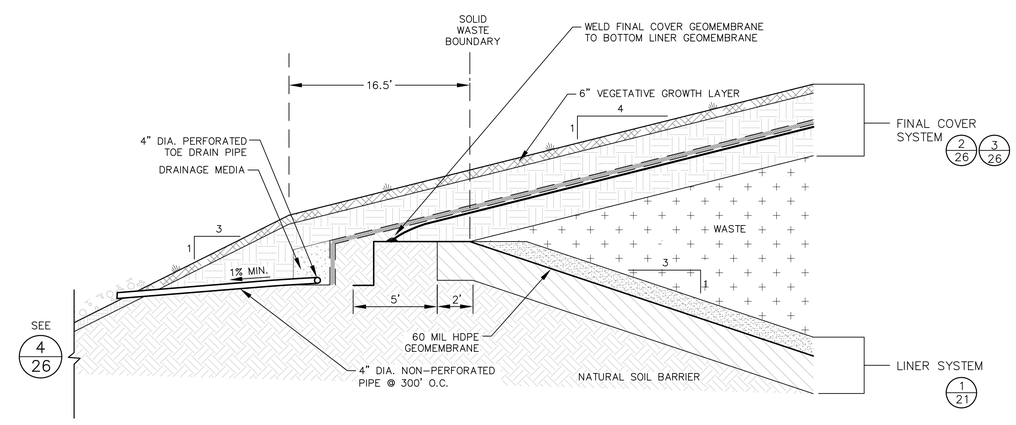
NOTES:

1. OWNER MAY SUBSTITUTE 18" SOIL BARRIER LAYER WITH 18" OF STABLE SUBGRADE AND GEOSYNTHETIC CLAY LINER.
2. IF GEOSYNTHETIC CLAY LINER IS USED, CLEAN DAILY AND INTERMEDIATE COVER MAY TAKE PLACE OF AS MUCH AS 12–INCHES OF STABLE SOIL SUBGRADE.
3. MAY SUBSTITUTE DOUBLE SIDED GEOCOMPOSITE WITH 12" GRANULAR SOIL WITH MINIMUM HYDRAULIC CONDUCTIVITY OF 1×10^{-3} CM/S.
4. PROTECTIVE SOIL LAYER WILL BE 18" MIN. IF 12" GRANULAR SOIL IS USED AS DRAINAGE LAYER

2 / 26 FINAL COVER SYSTEM- LINED AREAS
NOT TO SCALE



3 / 26 FINAL COVER SYSTEM- UNLINED AREAS
NOT TO SCALE



4 / 26 PERIMETER DITCH AND FINAL COVER TIE-IN
NOT TO SCALE

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LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
FINAL COVER DETAILS
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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SHEET 26

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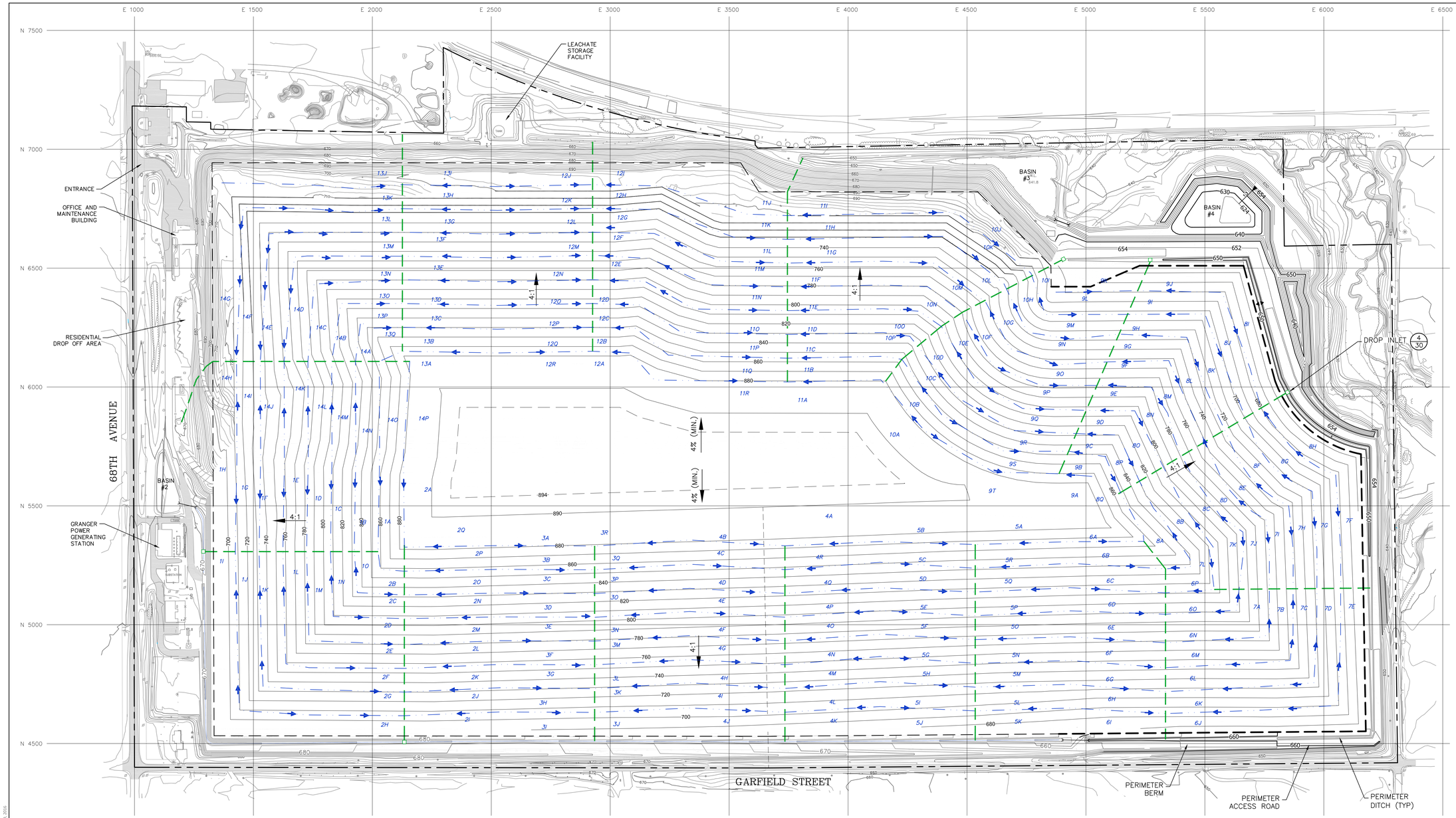

LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- 670 EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- TOP OF FINAL COVER CONTOUR (10 FT. INTERVAL)
- PROPOSED STORMWATER DRAINAGE CHANNEL @ 2% GRADE
- PROPOSED STORMWATER DOWNLETS
- 12J SUBCATCHMENT
- PROPOSED STORMWATER DROP INLETS

NOTES:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.
2. DRAINAGE CHANNEL LOCATIONS MAY BE ADJUSTED DUE TO SITE CONDITIONS PROVIDED MINIMUM SLOPE OF 2% AND MAXIMUM VERTICAL SPACINGS ARE MAINTAINED.

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LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
STORMWATER MANAGEMENT PLAN

OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

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CAD: OCF_EXP_27_STMWATER

SHEET 27

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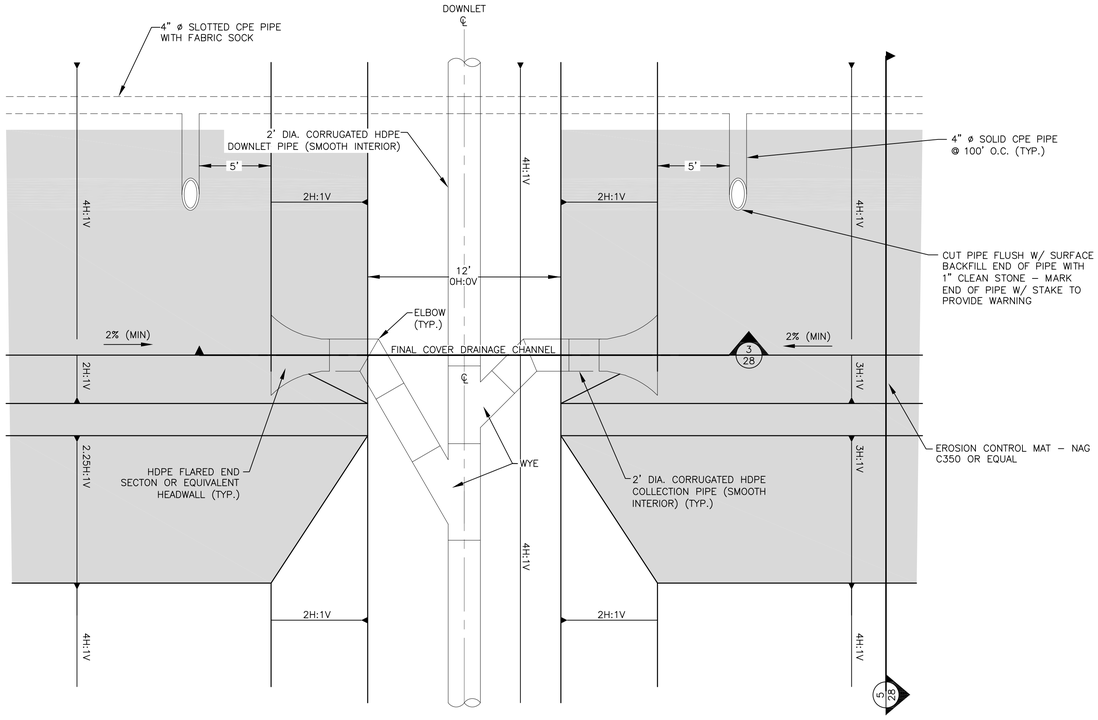
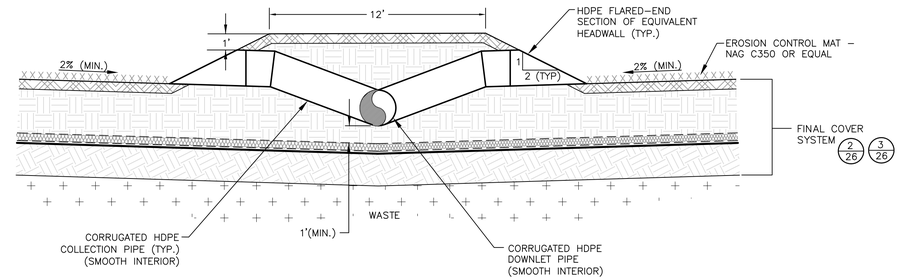
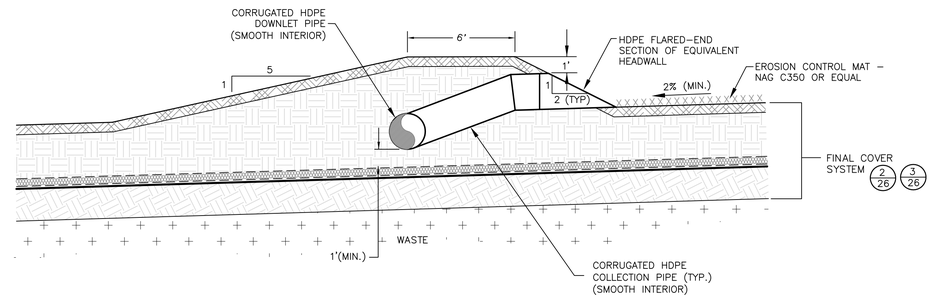


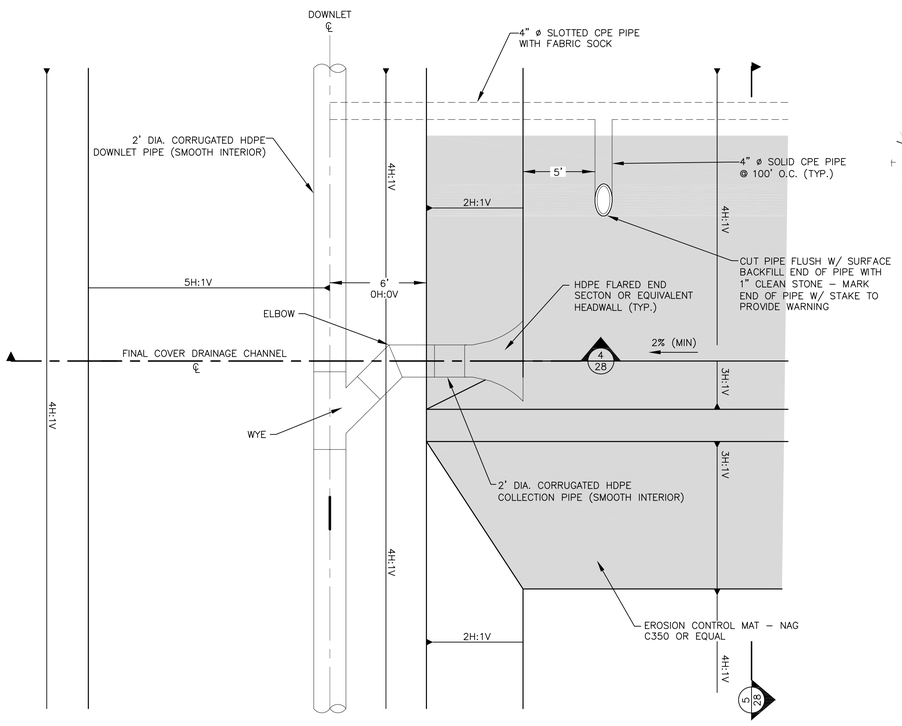
1/28 PLAN VIEW: 2- WAY DOWNLET - FINAL COVER DRAINAGE CHANNEL INTERSECTION
NOT TO SCALE



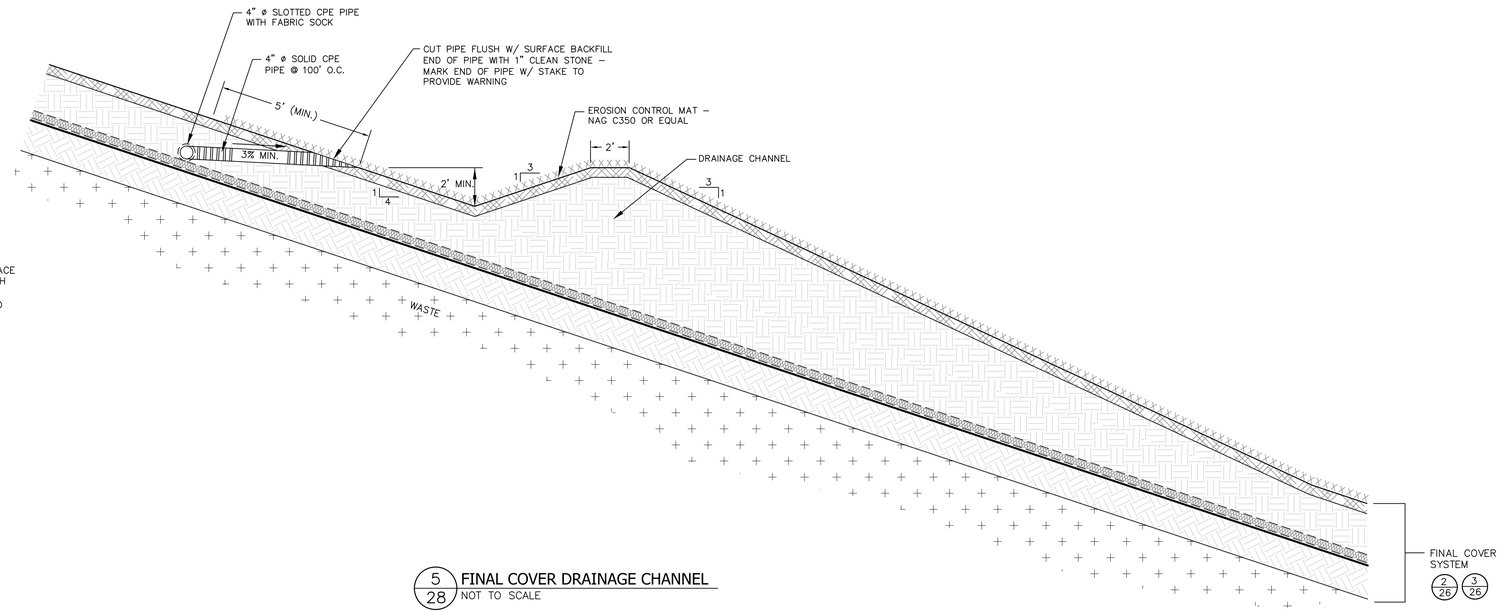
3/28 SECTION VIEW: 2- WAY DOWNLET - FINAL COVER DRAINAGE CHANNEL INTERSECTION
NOT TO SCALE



4/28 SECTION VIEW: 1- WAY DOWNLET - FINAL COVER DRAINAGE CHANNEL INTERSECTION
NOT TO SCALE



2/28 PLAN VIEW: 1- WAY DOWNLET - FINAL COVER DRAINAGE CHANNEL INTERSECTION
NOT TO SCALE



5/28 FINAL COVER DRAINAGE CHANNEL
NOT TO SCALE

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PREPARED FOR:
OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

REPUBLIC SERVICES

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
STORMWATER MANAGEMENT DETAILS
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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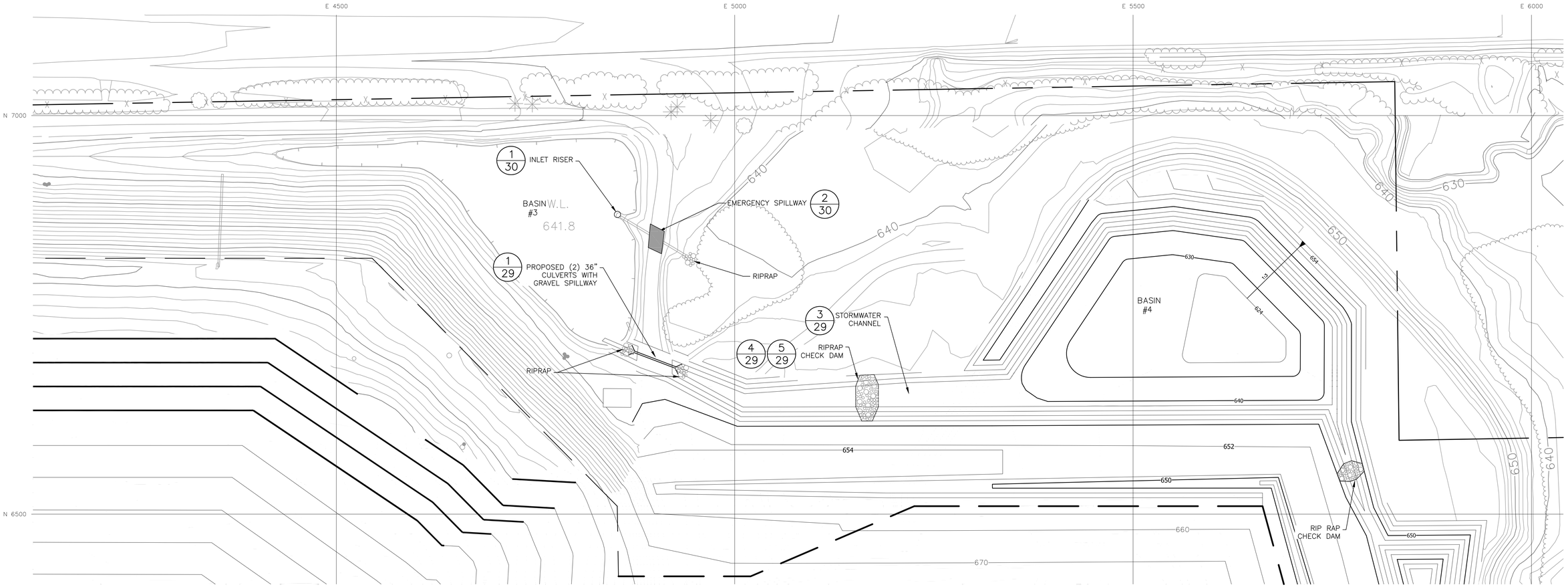
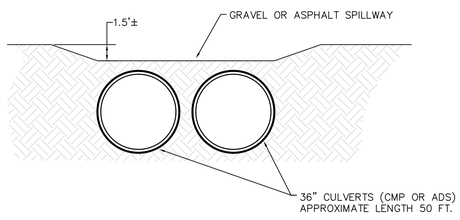
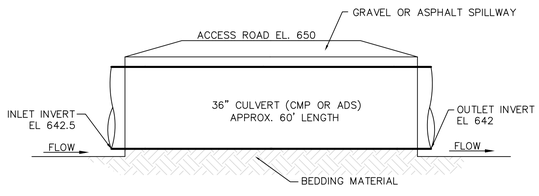
SHEET 28

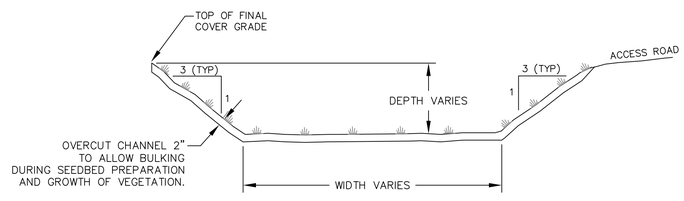




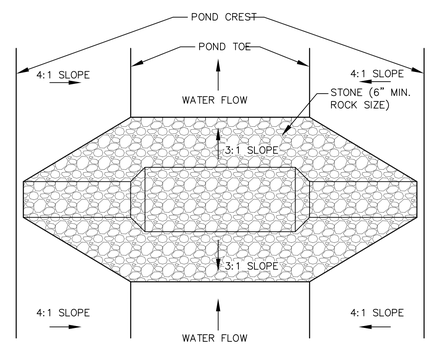
1/29 TYPICAL CULVERT- SECTION
NOT TO SCALE



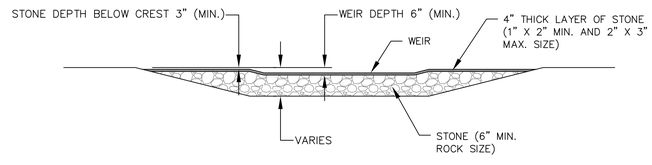
2/29 TYPICAL CULVERT- SIDE VIEW
NOT TO SCALE



3/29 STORMWATER CHANNEL SECTION
NOT TO SCALE



4/29 TYPICAL STONE CHECK DAM PLAN VIEW
SCALE: 1" = 10'



5/29 TYPICAL STONE CHECK DAM CROSS SECTION
SCALE: 1" = 10'

N

SCALE: 1" = 60'
0 30' 60' 120'

NOTES:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.

LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- 670 EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- 670 PROPOSED/FUTURE CONTOUR (10 FT. INTERVAL)

PREPARED FOR:
REPUBLIC SERVICES
OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
SEDIMENTAION BASINS #3 & #4
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

WEAVER CONSULTANTS GROUP
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GRAND RAPIDS, MICHIGAN 49504
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www.wcgrp.com

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DRAWN BY: JDA
REVIEWED BY: TAP
DATE: 5/20/2016
FILE: 0120-685-11-02-03
CADF_EXP_29_SED_BASINS

SHEET 29

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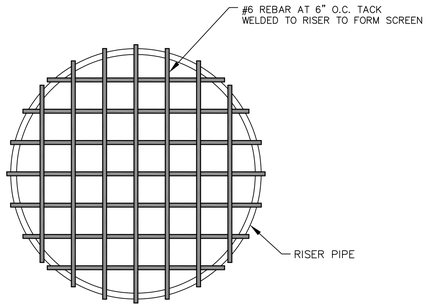
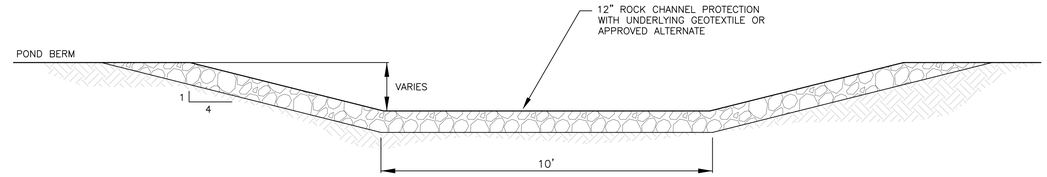
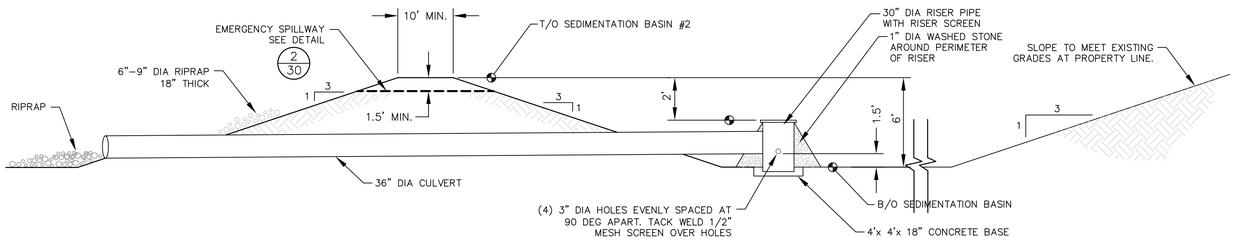
R:\PROJECTS\0120 - Allied\0120-685 Ottawa County (W)\11\02-03 Expansion Permit\CADD\CD7_EXP_29_SED_BASINS.dwg;jasnik;May 19, 2016



1/30 RISER SCREEN DETAIL
NOT TO SCALE

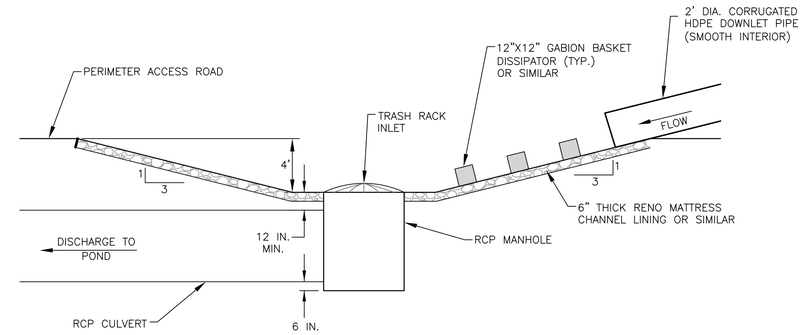


2/30 EMERGENCY SPILLWAY DETAIL
NOT TO SCALE

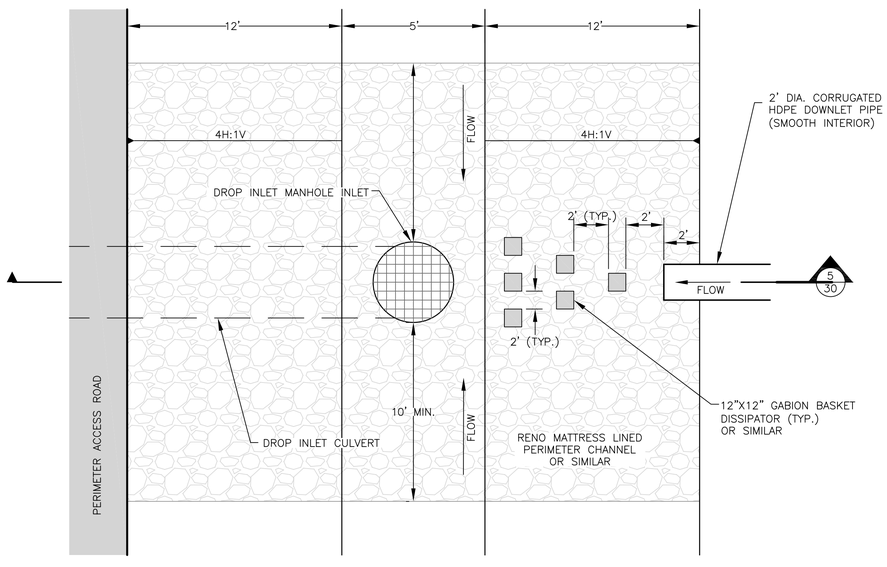


3/30 SEDIMENTATION BASIN WITH DISCHARGE STRUCTURE
NOT TO SCALE

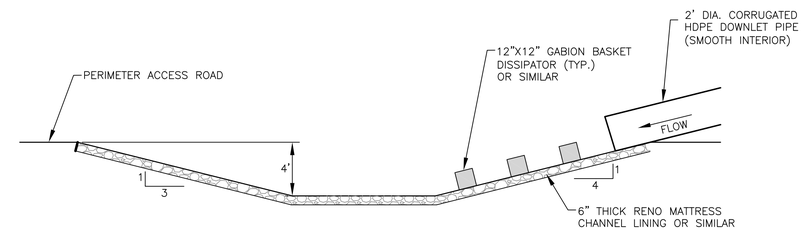
SEDIMENTATION BASIN ELEVATION SCHEDULE	DRAINAGE AREA	INLET CULVERT				OUTLET CULVERT				TOP OF POND	BASE OF POND
		EL INLET	EL OUTLET	SIZE	LENGTH	EL INLET	EL OUTLET	SIZE	LENGTH		
BASIN 1 -EXISTING	49	676	678	2X24	100	665	664	36	50	675	664
BASIN 2 -NA											
BASIN 3 -EXISTING	210	642.5	642	2x36	60	641.4	640.4	36	70	648	641
BASIN 4 -PROPOSED	117	649	648	2x36	100	642.5	642	2x36	60	648	642



5/30 CROSS SECTION- DROP INLET AND DOWNLET WITH ENERGY DISSIPATOR
NOT TO SCALE



4/30 PLAN VIEW- DROP INLET AND DOWNLET AT PERIMETER CHANNEL
NOT TO SCALE



6/30 CROSS SECTION- DROP INLET WITH ENERGY DISSIPATOR
NOT TO SCALE

PREPARED FOR:
REPUBLIC SERVICES
OTTAWA COUNTY LANDFILL, INC.
15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
SEDIMENTATION BASIN DETAILS
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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DATE: 5/20/2016
FILE: 0120-685-11-02-03
4X0F_EXP_30_SED_BAS_DET

SHEET 30

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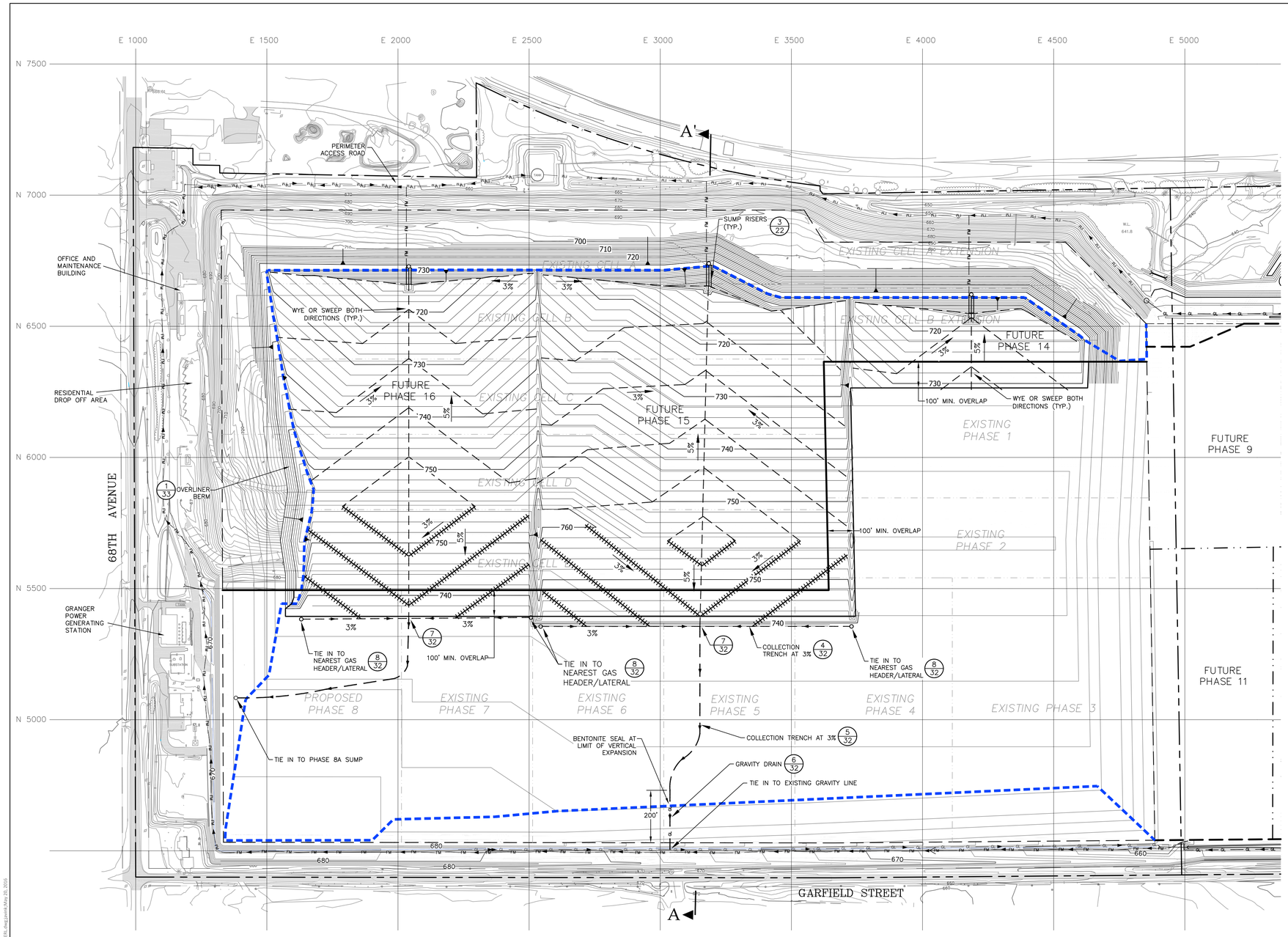

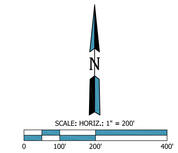

LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- PROPOSED LIMIT OF VERTICAL/LATERAL EXPANSION
- PERMITTED PHASE BOUNDARY
- EXPANSION PHASE BOUNDARY
- 670 — EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- PRIOR PERMITTED TOP OF WASTE GRADES
- 730 — OVERLINER BERM GRADES
- 792 — OVERLINER GRADES
- LIMIT OF PRE-SUBTITLE D (CELLS A – E)
- OVERLINER LEACHATE COLLECTION PIPE
- 5 FT. WIDE GEOCOMPOSITE STRIP DRAIN WITH DRAINAGE MEDIA
- FM — EXISTING LEACHATE FORCEMAIN
- GL — EXISTING LEACHATE GRAVITY SEWER
- GL — PROPOSED/FUTURE LEACHATE GRAVITY SEWER

NOTE:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.

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LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
OVERLINER BASE GRADES

OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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FILE: 0120-685-11-02-03
OCF_EXP_31&32_VERT_OVRL

SHEET 31

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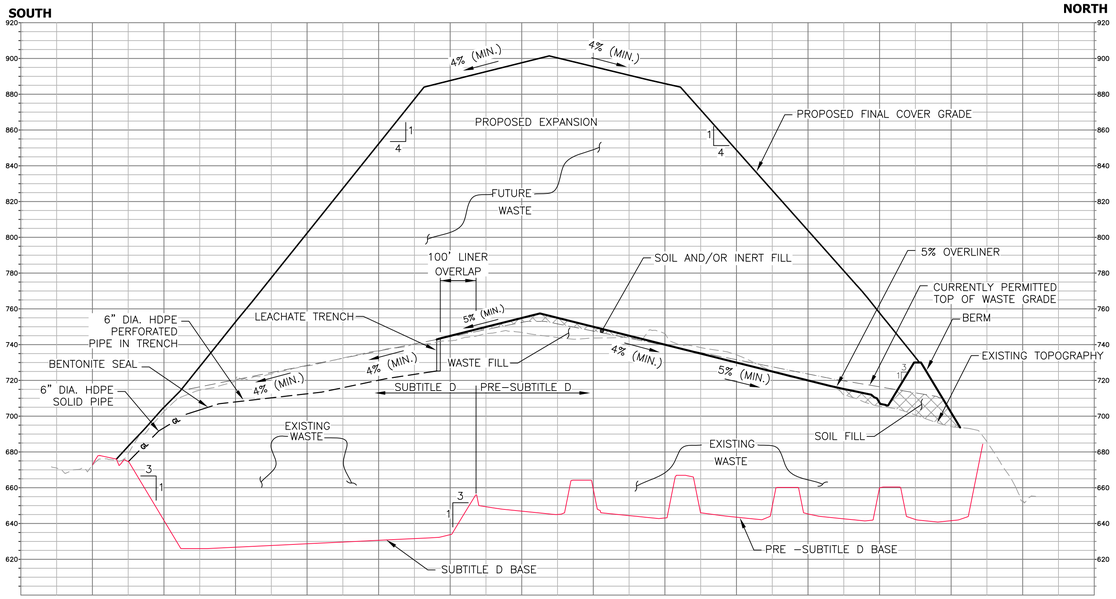
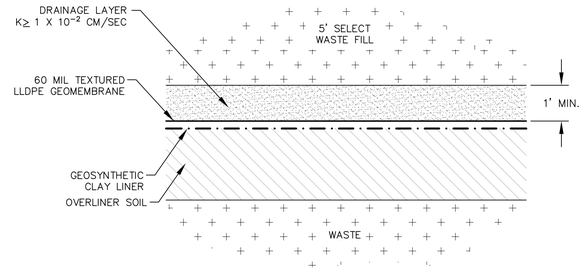


OVERLINER CROSS SECTION A - A'

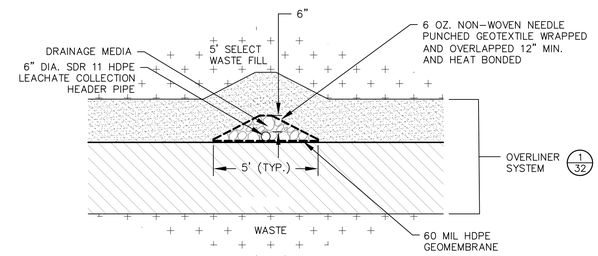
SCALE: HORIZ.: 1" = 200'
VERT.: 1" = 40'



NOTES:

1. GEOSYNTHETIC CLAY LINER MAY BE REPLACE WITH 2' THICK COMPACTED SOIL COVER.
2. 1' THICK LAYER OF PROTECTIVE COVER SOIL WITH HYDRAULIC CONDUCTIVITY OF 1.0 X 10^{-4} CM/SEC OR GREATER MAY BE PLACED OVER THE DRAINAGE LAYER IN PLACE OF 5 FT OF SELECT WASTE FILL.
3. DRAINAGE LAYER WITH HYDRAULIC CONDUCTIVITY OF 1.0 X 10 $^{-2}$ CM/SEC OR GREATER MAY BE REPLACED WITH DOUBLE-SIDED GEOCOMPOSITE WITH HYDRAULIC CONDUCTIVITY OF 1.0 CM/SEC OR GREATER AND 1' THICK DRAINAGE LAYER WITH HYDRAULIC CONDUCTIVITY OF 1.0 X 10^{-3} CM/SEC OR GREATER.

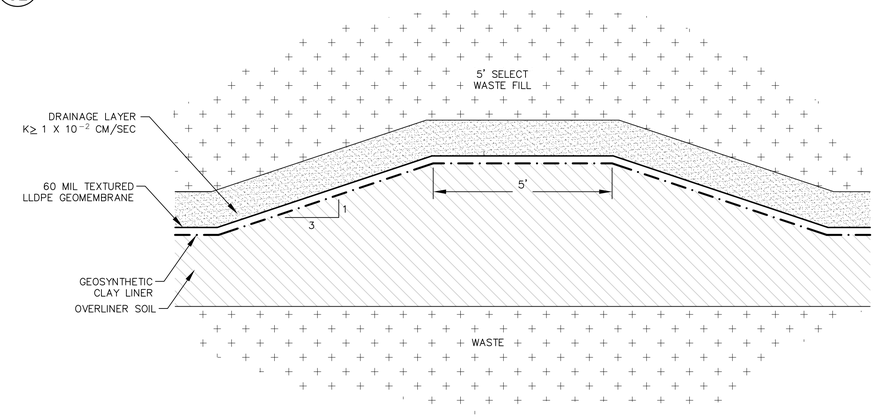
1/32 OVERLINER FLOOR SYSTEM
NOT TO SCALE



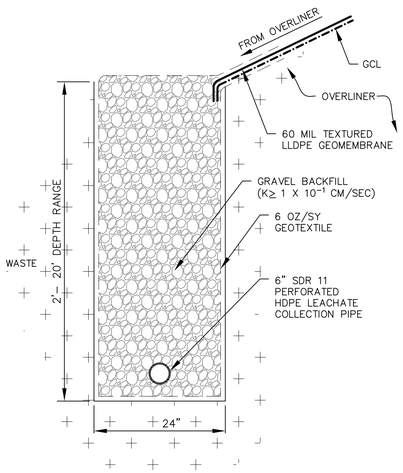
NOTES:

1. REPLACE LEACHATE PIPE WITH 5 FT. WIDE GEOCOMPOSITE STRIP DRAIN WHERE INDICATED ON SHEET 31.

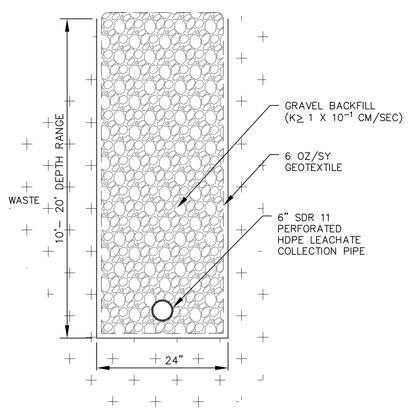
2/32 OVERLINER LEACHATE COLLECTION
NOT TO SCALE



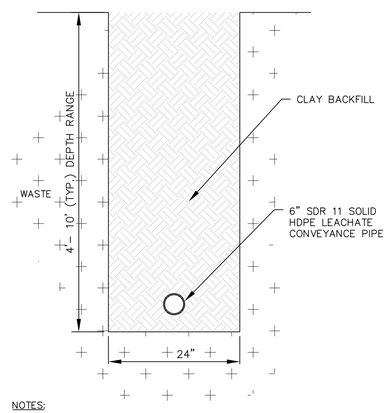
3/32 OVERLINER SEPARATION BERM (TYP.)
NOT TO SCALE



4/32 COLLECTION TRENCH NORTH - SOUTH SECTION
NOT TO SCALE



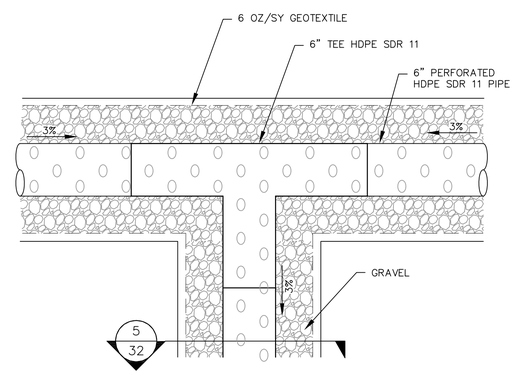
5/32 COLLECTION TRENCH EAST - WEST SECTION
NOT TO SCALE



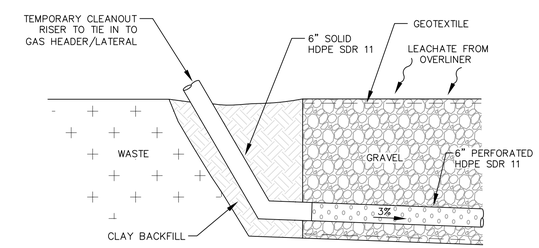
NOTES:

1. PLACE BENTONITE SEAL IN TRENCH AT TRANSITION BETWEEN PERFORATED AND SOLID PIPE.
2. EXTEND SOLID 6" DIA. HDPE PIPE 200 FT. FROM SOUTH EDGE OF WASTE BOUNDARY.

6/32 LEACHATE DISCHARGE GRAVITY DRAIN - PHASE 15
NOT TO SCALE



7/32 LEACHATE DISCHARGE TEE GRAVITY DRAIN
NOT TO SCALE



8/32 TRENCH CLEANOUT/ VENT DETAIL
NOT TO SCALE

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COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
OVERLINER BASE GRADES - CROSS SECTION
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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REVIEWED BY: TAP
DATE: 5/20/2016
FILE: 0120-685-11-02-03
CD: EXP_31&32_VERT_OVERL

SHEET 32

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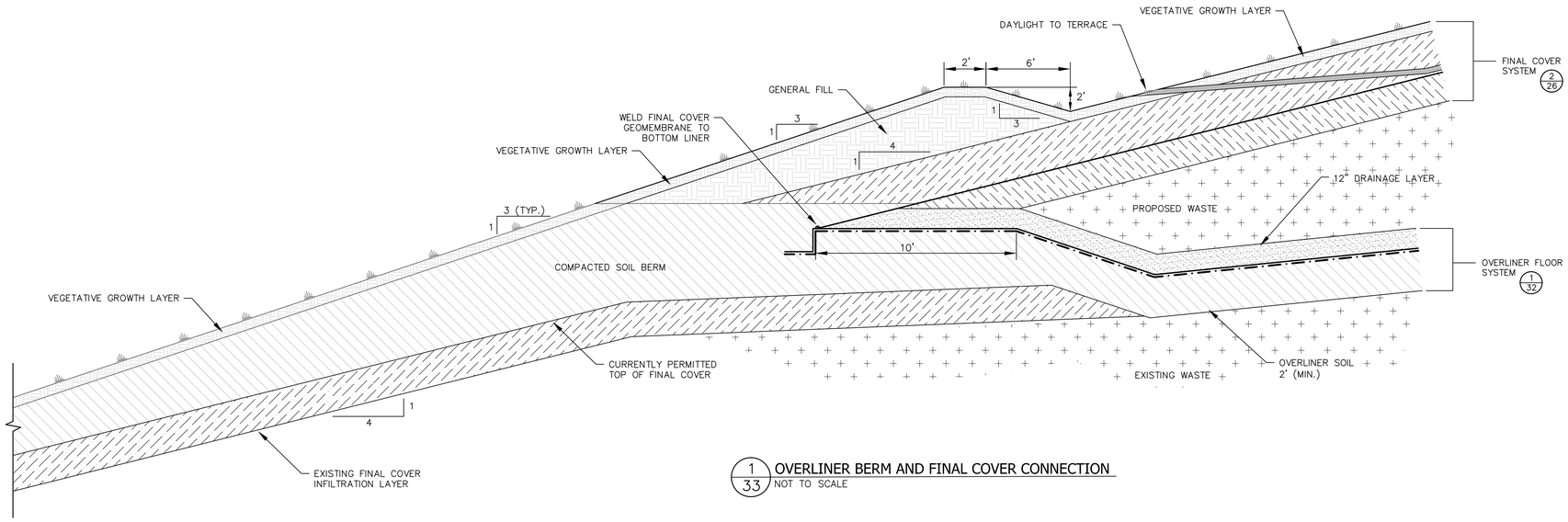
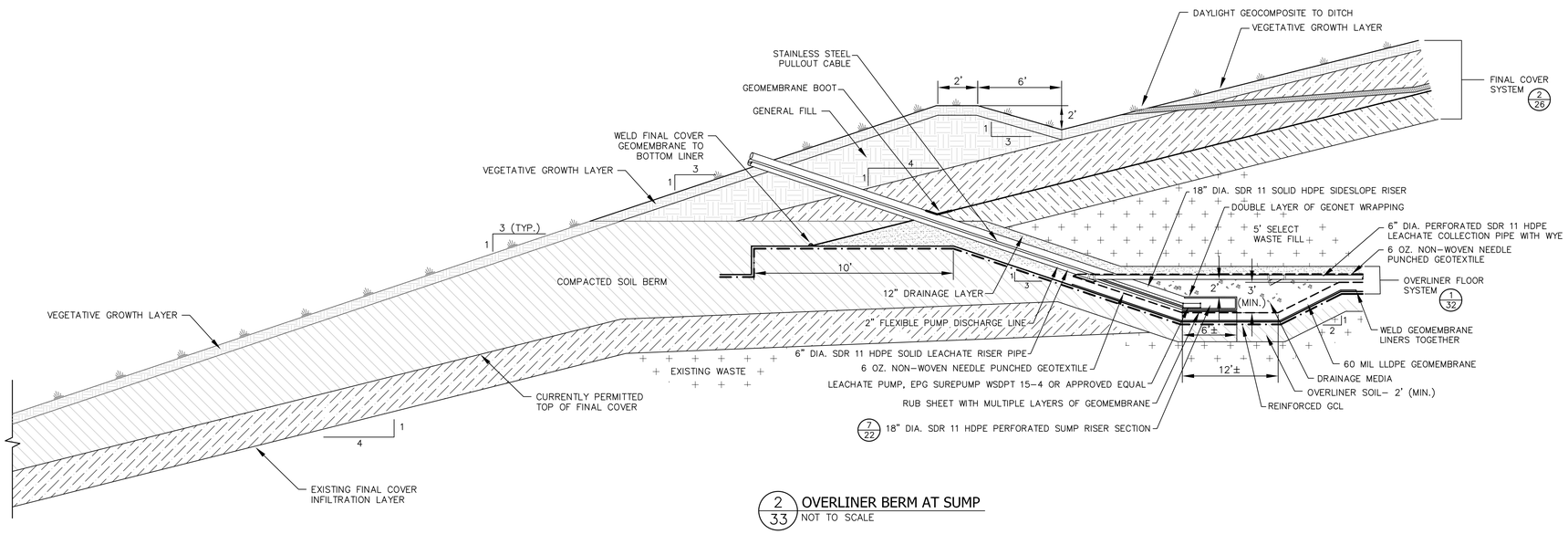


1/33 OVERLINER BERM AND FINAL COVER CONNECTION
NOT TO SCALE



2/33 OVERLINER BERM AT SUMP
NOT TO SCALE

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COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION
OVERLINER DETAILS
OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

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FILE:	0120-685-11-03
CADD	F_EXP_33_VERT_OVER_DET

SHEET 33

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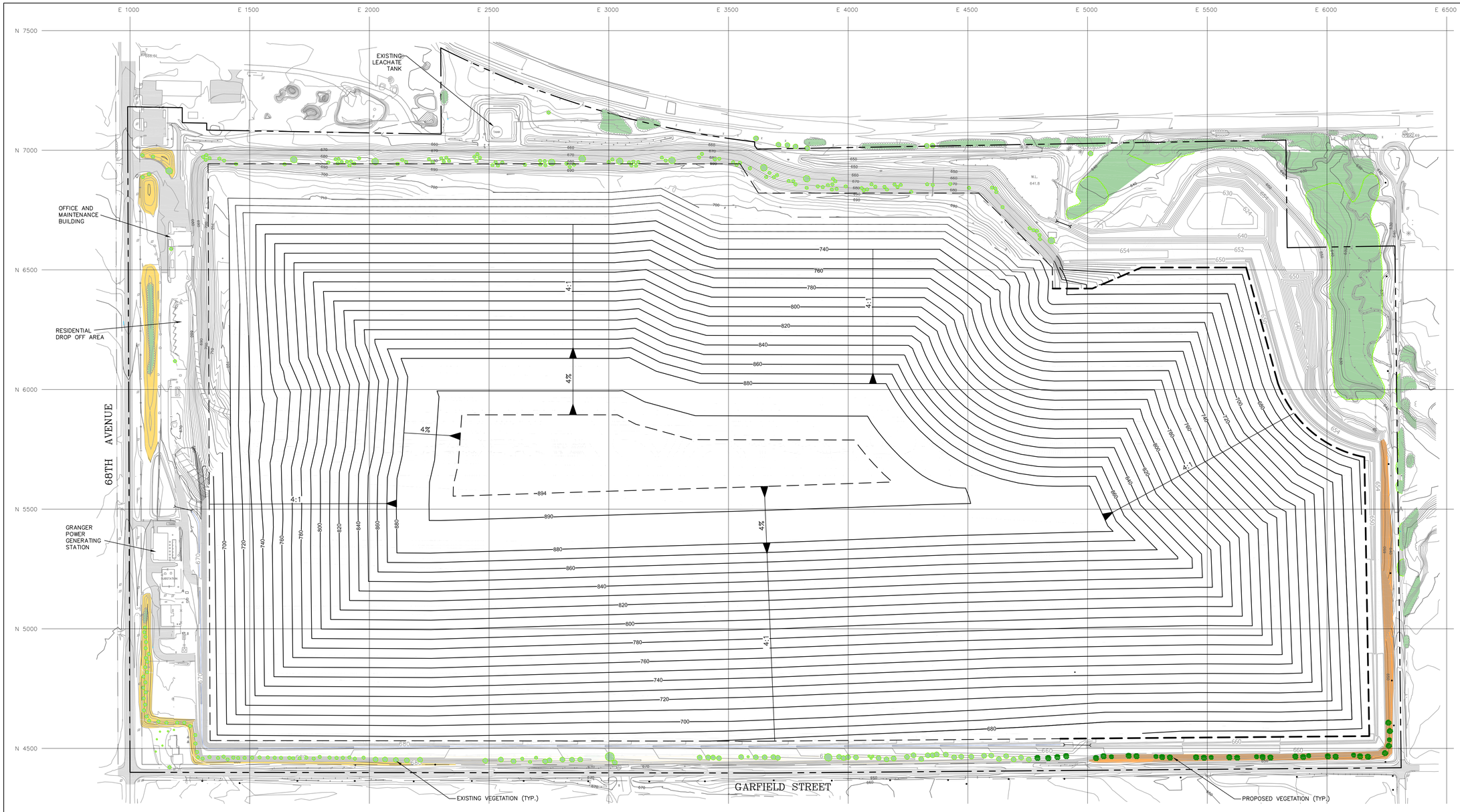
R:\PROJECTS\0120 - Allied\0120-685 Ottawa County (MI)\11\0120-03 Expansion Permit\CADD\DCF_EXP_33_VERT_OVER_DET.dwg\jamb May 20, 2016



LEGEND

- PROPERTY LINE
- PERMITTED SOLID WASTE BOUNDARY
- EXPANSION SOLID WASTE BOUNDARY
- EXISTING CONTOUR (10 FT. INTERVAL)
- EXISTING CONTOUR (2 FT. INTERVAL)
- PROPOSED/FUTURE CONTOUR (10 FT. INTERVAL)
- PROPOSED/FUTURE CONTOUR (2 FT. INTERVAL)
- PROPOSED/FUTURE TOP OF FINAL COVER CONTOUR (10 FT. INTERVAL)
- EXISTING VEGETATION TO REMAIN IN PLACE
- EXISTING SCREENING BERM
- PROPOSED VEGETATION
- PROPOSED SCREENING BERM

NOTE:

1. EXISTING TOPOGRAPHICAL INFORMATION FROM AERIAL SURVEY PERFORMED BY COOPER AERIAL SURVEYS, CO. ON MARCH 30, 2016.

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R:\PROJECTS\0120-685 Ottawa County (MI)\11\02-03 Expansion Permit\CADD\OCF_EXP_3A_LANDSC.dwg,jeweb,May 18, 2016

PREPARED FOR:

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15550 68TH AVE.
COOPERSVILLE, MI

LATERAL & VERTICAL EXPANSION - CONSTRUCTION PERMIT APPLICATION

LANDSCAPE PLAN

OTTAWA COUNTY FARMS LANDFILL
OTTAWA COUNTY, MICHIGAN

No.	DATE	REVISION DESCRIPTION

Weaver Consultants Group

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SHEET 34