INVENTUM ENGINEERING, PC

October 1, 2020

MEMORANDUM

To: Ben McPherson

From: John Black

CC: Todd Waldrop, James Edwards, Keith Adderley, Jon Williams, John Yensan, Al Trpevski, Dan Flanigan, Matt Reardon

RE: Placement of Unrecovered Coal Yard Stockpiles
Riverview Innovation & Technology Campus, Inc.
3875 River Road
Town of Tonawanda, New York
DEC Site No. C915353

Introduction

During the excavation and removal of coal from the south coal yard The Lardon Group (Lardon), on behalf of Powers Coal and Coke, placed materials that were rejected as not marketable around the perimeter of the South and North Coal Yards, among other locations. The result of the placement around the perimeter of the south coal yard is an area that has accumulated huge volumes of surface water runoff during periods of high precipitation and throughout the winter. Last winter more than 2,000,000 gallons of water accumulated that in the south coal yard that had to be pumped, treated, and discharged to the Town of Tonawanda sanitary sewer system. In addition, in 2019 the material was placed along the south road with no attention to the surface water controls, existing catch basins and South Ditch Access Road. OSC excavated soils around the catch basins, placed silt socks, and installed silt fence to prevent sediment migration from the piles along the South Ditch Access Road. While this approach worked in the winter 2019-2020, it is not as effective as reducing the steep slopes of the stockpiles and restoring the Stormwater Management System to its original design.

In accordance with the Coal and Coke Excavation Work Plan, this material should be placed back in the area from which it was excavated. Rather that have Lardon simply push the material back (which it how it was found), we would propose a more controlled approach, as follows.

Replacement

For purposes of this Work Plan, the reject piles around the south coal yard have been divided into six distinct stockpiles (Figure 1). The void created within the south coal yard was surveyed by OSC on October 13, 2019 (Figure 2). Inventum estimated the amount of material in the stockpile areas around the south coal yard (see Figures 1 and 2) as follows:

Pile No.	Estimated Length (FT.)	Side Slopes	Crest Elevation (FT)	Excavation Target (FT)	Height (FT)	Volume (CF)	Volume (CY)
1	230	1:1	606	602	4	3680	140
2	480	1:1	615	600	15	108,000	4,000
3	440	1:1	612	600	12	63,360	2,350
4	300	Flat	606	604	2	24,000	890
5	320	1:1	613	604	9	25,920	960
6	200	1:1	613	604	9	16,200	600
						241,160	8,940

The following assumptions and estimation methods were used to determine the volume of material in the stockpiles:

- The length of each stockpile was estimated based on the 2019 survey and field observations.
- The crest elevation of each stockpile was taken from the 2019 survey or estimated based on field observations.
- The base elevation for Pile 1 was based on the elevation of the pre-existing ground surface west of the stockpile.
- The base elevation was based on the catch basin rim elevations for Piles 2 and 3.
- The base elevations of Piles 4, 5 and 6 was based on the elevation of the ground surface in areas north of the conveyor structure. Matching that elevation will reduce the potential for ponding in the north coal yard this winter.

The result of these assumptions is an estimate of approximately 9,000 cubic yards of material to be placed back into the south coal yard excavation.

The volume available in the south coal yard was estimated using the data provided by OSC. Using the average end method across the survey array provided by OSC, it was determined that fill to an average elevation of approximately elevation (EL) 603 across the south coal yard would balance the replacement of the stockpiled material. This can be achieved by holding the grade along the south dich access road at no higher than 6-inches below the Catch Basin Rims. A nearly uniform grade to the conveyor of 3-percent (maximum on the west end), will allow reasonable drainage and eliminate the possibility of ponding and with proper best management practices, significant erosion.

The north coal yard was excavated in a series of ponds and ditches, that create multiple areas of accumulation and potential erosion. While less well defined, the volume of material to be graded in the North coal yard is believed to be approximately 5,000 cubic yards.

The coke yard is still under active reclamation, so the temporary grade for that area cannot be defined at this time.

Recommendation

This is not a recommendation for a final remedial action. As defined in the Coal and Coke Excavation Work Plan this area will be evaluated during the remedial investigation and the alternatives analysis. The activities are consistent with the SWPPP:

- The South and North Ditches will not be altered.
- Sedimentation Pools Nos. #001 and #002 will continue to function as designed.
- The grading will direct flow to the catch basins system and the existing piping to the north and south ditches will continue to be the primary flow to those systems.
- The Stormwater retention basis will not be altered.
- All surface water flow will continue to be monitored at Outfall #002.

As water accumulates in the sump, it will continue to be filtered and discharged under the Town of Tonawanda Permit to the sanitary sewer. The flow will be monitored and will be tested monthly (if flow).

As required under the Coal and Coke Excavation Work Plan, the replacement of the materials in the south and north coal yards is consistent with the intent of the SWPPP and will reduce the loading to the Sedimentation Pools, and the Stormwater Retention Basin. The placement is appropriate based on the following conditions:

- Powers Coal and Coke has completed their recovery.
- The materials are being placed within the same area of investigation (AOI). The material was not removed from the south or north coal yard, this is simple replacement within the area from which Lardon excavated the materials.
- The material is being placed above the groundwater surface. The area is above elevation 597-feet above mean seal level (ft-msl) the standing pool level in the stormwater retention basin, likely representing local groundwater. The coal yard dried up after it was pumped down, suggesting the bottom must be higher than any locally perched water.
- The material as currently stockpiled presents relatively steep side slopes and has produced sediment against the southern silt fence.
- The cavity within the coal yard has accumulated millions of gallons of water in the past winter season, potentially exacerbating local groundwater elevations and volume.
- The material is currently loosely placed, increasing the void space and potential for infiltration and therefore potential for contact between precipitation and the materials. Placing and compacting the materials will reduce the potential for contact between precipitation and the materials and will promote runoff while limiting surface erosion.
- Four test pits are planned for this area during the RI. Inventum will collect 10 additional samples during the replacement program, three from the base of the coal yard excavation, five from the materials being placed from the stockpiles, and two from the dredge material pile near the retention basin to provide a representative characterization of the south coal yard.
    - Three at the lowest points of each one-third of the coal yard excavation; Survey Locations #12 (CY-12-date), #38 (CY-38-date), and #52 (CY-52-date) (Sketch 2). These will be collected from the clay below the former coal yard to provide an understanding of the impact of the coal/perched water at the lowest clay elevations.

  - Five samples will be collected from the excavation materials based on expected volume; two from Pile 2 (CY-P1A-date and CY-P1B-date), 1 from Pile 3 (CY-P3-date), one from Pile 4 (CY-P4-date) and one from Pile 5 (CY-P5-date) (Figure 1).
  - Two samples will be collected from the retention basin dredged materials stockpile.
  - The samples will be tested for TCL VOCs, TCL SVOCs, TAL Metals, PCBs, and Pesticides and herbicides.
  - The sample from clay location #12, and from Pile 5 will also be tested for PFAS, and 1,4-Dioxane.
- Inventum will still complete the RI test pits, but the samples collected during this activity will support the RI characterization of the fill.

Placement of the materials can be completed prior to the winter season avoiding the potential accumulation of rainfall. The placement shall be done in a manner that allows extraction and testing of any accumulated pore water, that eliminates the potential for accumulation of large quantities of surface water that could result in a release from the site, and that allows control of runoff without significant erosion of the surface. The following approach is recommended:

- Collection of samples from three points in the existing south coal yard excavation for documentation of the base conditions:
- Collection of five composite samples of the materials to be placed in the excavation as listed above.
- Collection of two composite samples from the retention basin dredged materials stockpile.
- Setting two CAMP monitoring stations; one downwind of the area of excavation and one downwind of the area of placement.
- Installing silt fence around each of the catch basins in the south coal yard and the catch basin in the north coal yard (Sketch 1).
- Resetting of the existing sump (the deepest point in the coal yard excavation) with three inlets for 3-inch diameter HDPE pipes and surrounded with 2-inch crushed stone. Until a remedial decision is reached, water from the sump, when accumulated in sufficient volume will be treated and discharged to the POTW.
- Placement of three alignments of drainage materials within the base of the current excavation (Sketch 3). The drainage materials shall consist of a layer of non-woven geotextile, a 3-inch diameter perforated HDPE pipe, clean 1-inch (or greater) stone, and a second layer of non-woven fabric (see attached). The 3-inch diameter HDPE pipes will be tied into the reconstructed sump. This system will allow monitoring of the accumulation of water above the clay layer within the south and north coal yards, allowing pumping of excess water, and will allow collection of samples of the perched water over time.
- The materials from the stockpiles shall be spread and compacted in the coal yards. The first layer of fill over the drainage piping shall be spread in a 12-inch (nominal) lift and shall be compacted by two passes of a smoot drum roller.
- Prior to grading, each stockpile surface will be inspected for the presence of grossly contaminated material. Any grossly contaminated material will be removed as outlined below.
- As the materials are placed, they will be screened for grossly contaminated materials as defined in the coal and coke excavation work plan and as follows:

Reject materials screened from the coal and coke shall be returned to the excavations, as shown on the excavation sequence, unless they are potentially grossly contaminated. For purposes of this IRM potential gross contamination shall mean:

1. Free flowing non-aqueous liquids (oil or tar).
2. Significant recoverable accumulations of solid tar materials.
3. Materials identified by the owner's onsite representative or the NYSDEC.

Potentially grossly contaminated materials shall be removed with an excavator and shall be placed in the stockpile area in the former Thaw Shed (Building No. 65). The potentially grossly contaminated soils shall be placed on two layers of 6 mil (minimum) polyethylene sheeting and shall not touch the sides of the Thaw Shed.

- All subsequent lifts shall be placed in 8-inch thick (nominal) lifts and compacted by no less than three passes of the compaction equipment.
- As the yards are filled, maintain the elevation no higher than 6-inches below the south drainage ditch access road and the catch basins in the south coal yard and the basin in the north yard.
- The final slope shall rise no more than 3-percent (maximum) slope rising to the conveyor alignment to a relatively uniform elevation along the existing conveyor along the stacker/ reclaimer alignment.
- Spreading of the stormwater retention basin dredging pile over the surface of the placed stockpiled materials. The materials shall be spread over the south and north coal yard.
- Seed, fertilize and mulch the surface with a mixture of fast-growing perennial rye (30 pounds per acre) and the following:
    - Empire/Pardee Common white clover 16 pounds per acre
    - Tall fescue KY-31/Rebel 20 pounds per acre
    - Redtop 2 pounds per acre

The clover seeding rate is twice the typical recommendation as clover is a feed plot species for deer. Given the deer population on the property, additional clover seed is recommended.

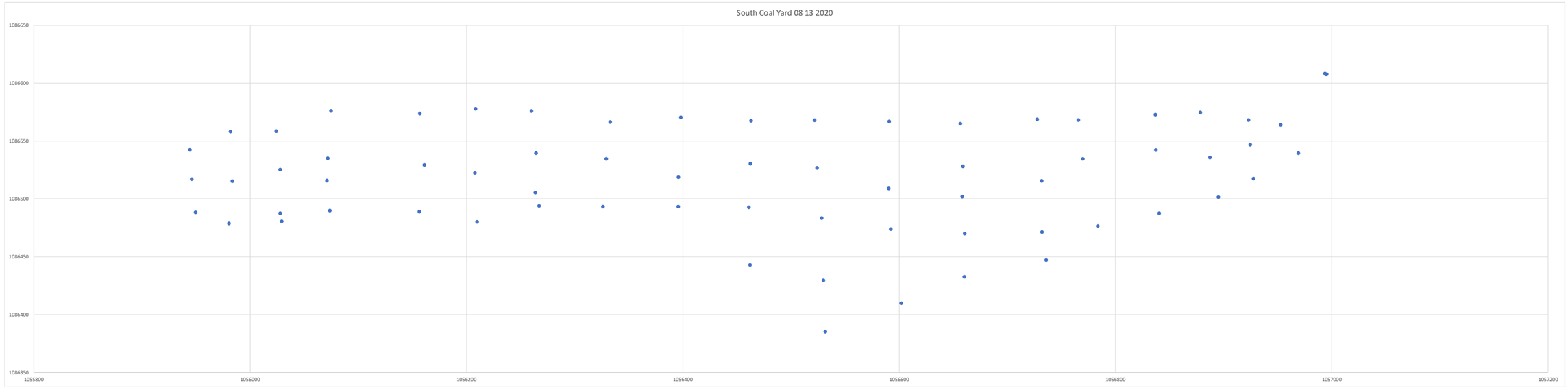
Tables

Table 1
Coal Yard GPS Location Data
Riverview Innovation Technology Campus, Inc.
Town of Tonawanda, New York

Survey Location	Northing	Easting	Elevation
1	1086542.4	1055944.2	599.729
2	1086517	1055945.9	599.386
3	1086488.4	1055949.4	599.247
4	1086478.8	1055980.3	599.338
5	1086515.3	1055983.5	599.486
6	1086558.3	1055981.7	601.028
7	1086558.6	1056024.2	601.42
8	1086525.3	1056027.7	601.262
9	1086487.6	1056027.7	600.627
10	1086480.6	1056029.1	599.392
11	1086489.9	1056073.6	599.619
12	1086515.8	1056070.9	599.64
13	1086535.1	1056071.8	601.489
14	1086576	1056074.8	600.842
15	1086573.7	1056156.8	599.493
16	1086529.4	1056161	599.191
17	1086488.9	1056156.3	599.214
18	1086480.1	1056209.7	600.07
19	1086522.3	1056207.7	600.28
20	1086577.8	1056208.4	600.167
21	1086575.9	1056260.1	599.825
22	1086539.6	1056264.2	599.457
23	1086505.4	1056263.6	599.874
24	1086493.9	1056267.1	600.14
25	1086493.3	1056326	600.382
27	1086534.5	1056329.1	600.137
28	1086566.5	1056332.8	600.148
29	1086570.5	1056398.1	600.181
30	1086518.7	1056395.9	599.927
31	1086493.3	1056395.7	600.341
32	1086442.9	1056462.1	600.696
33	1086492.6	1056461	600.769
34	1086530.3	1056462.5	600.735
35	1086567.5	1056463.1	600.842

36	1086568	1056521.7	600.718
37	1086526.8	1056524.1	600.625
38	1086483.4	1056528.3	599.842
39	1086429.6	1056530	601.203
40	1086385.1	1056531.8	601.833
41	1086409.9	1056601.8	600.899
42	1086473.8	1056592.2	600.145
43	1086509	1056590.2	600.541
44	1086566.9	1056590.7	600.8
45	1086564.9	1056656.6	600.911
46	1086528.1	1056658.8	599.899
47	1086502	1056658.3	600.69
48	1086469.9	1056660.5	600.3
49	1086432.8	1056660.1	601.422
50	1086447.1	1056735.9	602.263
51	1086471.3	1056732.1	600.68
52	1086515.6	1056731.7	600.44
53	1086568.7	1056727.6	600.922
54	1086568.1	1056765.6	600.968
55	1086534.6	1056769.8	600.366
56	1086476.6	1056783.6	601.065
57	1086487.5	1056840.3	602.086
58	1086542.2	1056837.2	604.817
59	1086572.8	1056836.8	604.925
60	1086574.6	1056878.5	605.369
61	1086535.7	1056887.2	603.359
62	1086501.5	1056895.1	602.26
63	1086517.5	1056927.6	602.556
64	1086546.8	1056924.5	603.057
65	1086568	1056922.9	604.995
66	1086563.9	1056952.7	604.65
67	1086539.5	1056969	603.394
68	1086608.3	1056993.6	603.793
69	1086607.7	1056995.2	601.236
70	1086607.7	1056994.3	600.806

Table 2
Coal Yard GPS Location Plot
Riverview Innovation Technology Campus, Inc.
Town of Tonawanda, New York



Figures

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Matchline Sheet 3 of 5
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Matchline Sheet 4 of 5
Matchline Sheet 5 of 5
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Gravel Drive
Metal Frame
Gravel Drive
Wooded Area
Conveyor
Pond
Well
Tank
Guy Wire
Smoke Stack
Guy Wire
Guy Wire
Ex Pin
Utility Flagging
Top of portland cement stone pile
6' Chain Link Fence with Barbed Wire Top
Gravel Drive

INLET LOCATION

4
5
6
2
3
2

PLACED AFTER TOPO PHOTOGRAPHY

FIGURE 1
SOUTH COAL YARD

Legend

Abbreviations

Ex - Existing
E - East
N - North
W - West
S - South
R.O.W. - Right of Way
A.K.A. - also known as
EM Electric Meter
Well Monitoring Well
ELMH Electric Hand Hole
Deciduous Tree
Bush
Coniferous Tree
Electric Manhole
SignalPole
Cable Manhole
Water Manhole
Traffic Manhole

Symbols

Sanitary Manhole
Cleanout
Catch Basin
Drain Inlet
Storm Manhole
Yard Drain
Cable TV
Electric Riser
Power Pole
Guy Wire Anchor
Telephone Riser
Fire Hydrant
Water Valve
Water Service Valve
Gas Line Marker
Gas Valve
Gas Service Valve
Sign
Mailbox
Metal Post
Concrete R.O.W. Monument
Light Standard
Telephone Manhole
Bollard
Irrigation Control Valve

Line Styles

ST Sanitary Sewer
SA Storm Sewer
W Water Line
G Gas Line
T Telephone Wires or Cables
E Electric Wires or Cables
OH Overhead Wires
100 Contour Line
Centerline of Ditch
Crown of Pavement
Centerline of Road
Right of Way Line
Building Setback Line
Easement Line
Property Line
UE Underground Electric
Paint Stripe
Former Boundary Parcel Line
UCTV Underground Cable TV
UFO Underground Fiber Optic
RailRoad Tracks

NBMS 50348
Cap Detail

60' 0 60' 120'
SCALE BAR IN FEET

Sheet 4 of 5

Niagara Boundary
And Mapping Services
761 Cayuga Street
Lewiston, NY 14092
(716) 297-6540
FAX (716) 297-9586
E-MAIL KLS@NBSMS.COM

LOT	SECTION	TOWNSHIP	RANGE
97 Mile Reserve			
Town	Tonawanda		
COUNTY	Erie		
STATE	New York		
DATE	November 2019		
SCALE	1" = 60'		
JOB NO.	9512 Area 110-20		
REVISIONS			

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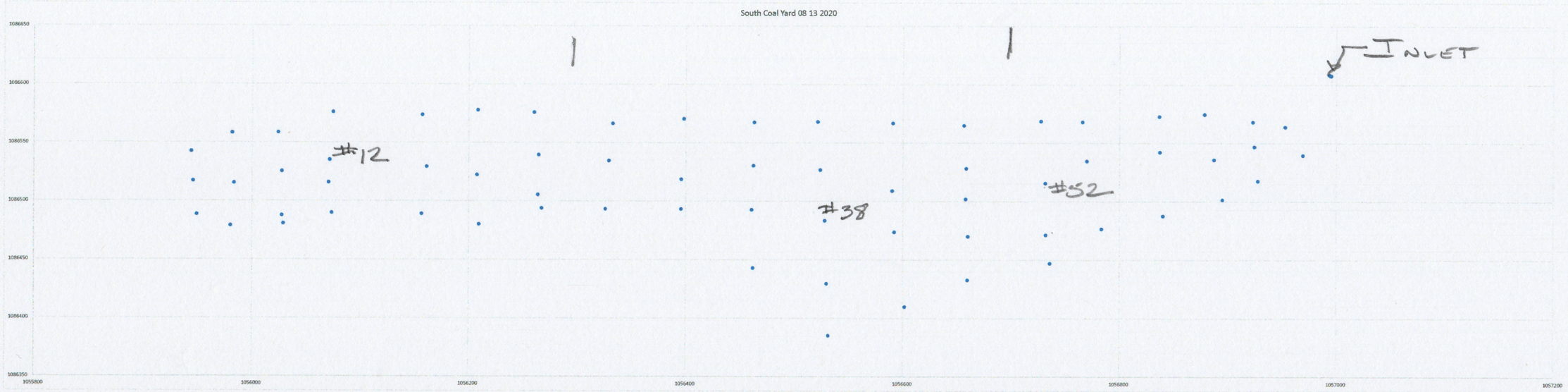

FIGURE 2
SURVEY DATA

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Matchline Sheet 4 of 5

Matchline Sheet 5 of 5

603

605

604

604

603

602

604

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SKETCH 1

TEMPORARY GRADE

NORTH TEE
(EL 600' TO EL 600.5')

NORTH COLLECTOR
(EL. 598 TO EL. 600')

EXISTING
SUMP
(RESET INVERT
TO EL. 598')

SOUTH COLLECTOR
(EL. 598 TO
599')

CENTRAL COLLECTOR
(EL. 598 TO EL. 600')

SKETCH 2
DRAINAGE

INVENTUM ENGINEERING

SHEET NO. 1 OF
PROJECT NO. RITC
DATE 9/10/2020
BY
CHK'D

SUBJECT EWP Collection System