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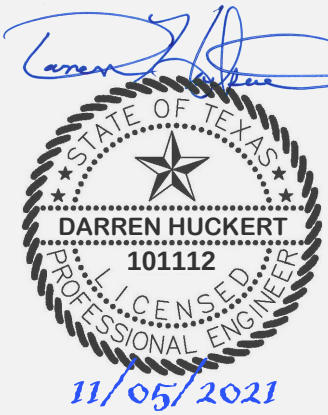


Cold Site

9917 Hill Lane

Manor, Travis County, TX 78653

Detention Waiver Request

Prepared by:

GARZA EMC, LLC.
7708 Rialto Blvd., Suite 125
Austin, Texas 78735
TBPE Registration No. F-14629

November 2021

11/05/2021

Mr. Scott Dunlop
City of Manor Development Services
105 E. Eggleston Street
Manor, Texas 77865

RE: Detention Waiver Request
Cold Site
Manor, Travis County, Texas

Dear Mr. Dunlop,

On behalf of the property owner, Butler Family Partnership Ltd., GarzaEMC is submitting this Site Plan Application for the above referenced project. The proposed development consists of a 15.86-acre lot with 133,062 square feet of initial building area (44,522 square feet for future buildout) and related parking, access, and utility infrastructure. The site is located northeast of the intersection of SH 130 and Hwy 290 and is bounded to the north by Hill Lane and the west by the Manor city limits line.

The proposed development lies within the full purpose city limits of Manor, Texas and is zoned IN-1 (Light Industrial). The planned improvements consist of mass grading and stormwater conveyance systems on Lot 1 (the South lot) and site improvements to construct a cold storage office/warehouse facility on Lot 2 (North site) of the Hill Industrial Subdivision, which is a short form plat application currently under review with the City of Manor. The overall acreage of the property is 46.4494 acres of which approximately 32.81 acres will comprise the project's limits of construction across both lots. The site is located in the Gilleland Creek watershed and has portions of the FEMA defined flood plain on its southern, downgradient area according to FEMA FIRM map panel number 48453C0480J, dated August 18, 2014.

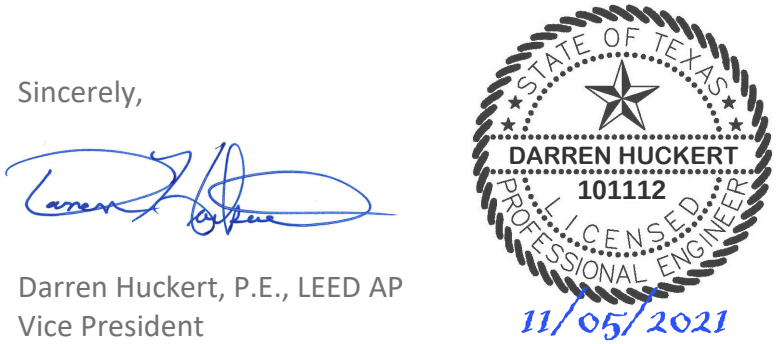
The site will receive water and wastewater utility service from the City of Manor through public facilities within Hill Lane. The public facilities are being extended down Hill Lane currently as part of the neighboring St. Joseph's Catholic Church development.

Please contact our office should you require any additional items or if you have any questions in your review of the application.

We are requesting a waiver for the City of Manor Code of Ordinances, Chapter 10, Article III, Section 41(b)(1), which states that "all drainage improvements within the City's jurisdiction shall be designed in accordance with the City of Austin's Drainage Criteria Manual." The specific section of The City of Austin's Drainage Criteria Manual (DCM) that this waiver applies to is Section 1.2.2(D). The proposed development complies with Section 1.2.2(A) of the DCM, which states that "stormwater runoff peak flow rates for the two (2), ten (10), 25 and 100-year frequency storms shall not cause increase inundation of any building or roadway surface or create any additional adverse flooding impacts."

A detention analysis is included as a subsection of this Engineering & Drainage report. The results of this analysis show the proposed development does not cause an adverse impact to Gilleland Creek. As such, GarzaEMC requests a Detention Waiver be granted for the subject tract.

Sincerely,



Darren Huckert, P.E., LEED AP
Vice President

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1.0 EXISTING CONDITIONS

The hydrologic methods used for the analysis of existing conditions in the Gilleland Creek watershed consisted of the use of the City of Austin HEC HMS model downloaded from the City of Austin FloodPro database. The HEC HMS version used is 3.0.1. The model was used with ATLAS 14 rainfall data from the City of Austin Drainage Criteria Manual to predict peak discharges and peak times for the Gilleland Creek watershed.

1.1 DRAINAGE BASIN DELINEATION

The subbasins used in the model were the preexisting subbasins specified in the City of Austin HEC HMS model. These subbasins were also provided in the form of shapefiles to be used in AutoCAD. The existing subbasins are shown in Figure 1.

1.2 MODEL INPUT PARAMETERS

Model input parameters were taken directly from the COA's existing conditions Gilleland Creek HEC HMS model with no modifications. The model utilized Soil Conservation Service (SCS) Loss Rate method, establishing base curve numbers for each drainage basin with impervious cover input separately based on existing condition land usage. The SCS dimensionless unit hydrograph was used to define the unit hydrographs' overall shape and timing. The existing model lag times were not modified.

Rainfall data was obtained from the COA Drainage Criteria Manual for a 24 hour frequency storm. The 2, 10, 25, and 100-year storms were analyzed.

1.3 MODEL RESULTS

Model results for existing conditions in the vicinity of the project area through the City of Manor are summarized in Table 1 for each frequency storm.

Table 1 – Existing Conditions Hydrologic Results

HMS Element ID	Existing Conditions 100-Year Peak Flow (cfs)	Existing Conditions 25-Year Peak Flow (cfs)	Existing Conditions 10-Year Peak Flow (cfs)	Existing Conditions 2-Year Peak Flow (cfs)
GIL970	464.56	335.07	254.28	119.7
J970	2244.26	1551.02	1171.77	584.02
J970_975	25824.87	16629.39	11720.89	4352.54
GIL980	355.52	257.6	196.21	92.56
GIL990	544.23	394.55	300.74	142.31
J980_990	25851.7	16645.56	11727.92	4354.12
J1020	25796.93	16636.68	11718.28	4352.66

2.0 DEVELOPED CONDITIONS

The existing conditions HEC HMS model was used as the starting point for the developed conditions analysis. The ultimate Cold Site development conditions were analyzed for a maximum impervious cover value within the drainage basin to compare realistic future conditions to current conditions.

2.1 DRAINAGE BASIN DELINEATION

Using the existing subbasins as a starting point, the subbasin boundaries were modified and a new subbasin was added to contain the developed site. Figure 2 shows the developed conditions drainage basins in the project area, as well as their area within the overall Gilleland Creek watershed. The figure also labels the HEC HMS nodes for which peak flows are calculated and summarized in the results section.

2.2 MODEL INPUT PARAMETERS

Using the existing HEC HMS model as a starting point, modifications were made to the drainage basin areas, impervious cover percentages, and lag times for the basins in the vicinity of the project to account for developed conditions. No changes were made to other model parameters.

The new Site subbasin was created with the same curve number as the area it previously occupied, but with an increased impervious cover. It was connected downstream to junction J980_990 which is where the outfall would be expected to go. The surrounding subbasins' lag times were recalculated to account for the new geometry due to the new subbasin.

2.3 PRELIMINARY DETENTION POND ESTIMATION

A detention pond was preliminarily sized to receive, store, and release stormwater runoff from the new Site subbasin. The pond was located at the downstream end of the subbasin. The outlet structure consists of two orifices and a weir.

2.4 MODEL RESULTS

Model results for developed conditions without detention ponds in the vicinity of the project area and along Gilleland Creek through the City of Manor are summarized in Table 2 for each frequency storm. Table 3 summarizes the model results for each frequency storm for the developed condition with the preliminary detention pond in place. Finally, Table 4 provides a side-by-side comparison of the model results for existing conditions, developed conditions without a pond, and developed conditions with a pond for the 100-year storm only.

Table 2 – Developed Conditions without Detention Pond Hydrologic Results

HMS Element ID	Developed Conditions 100-Year Peak Flow (cfs)	Developed Conditions 25-Year Peak Flow (cfs)	Developed Conditions 10-Year Peak Flow (cfs)	Developed Conditions 2-Year Peak Flow (cfs)
GIL970	417.26	301.48	229.11	108.06
J970	2164.42	1500.71	1127.26	564.69
J970_975	25812.95	16625.03	11718.42	4351.84
Site	388.46	294.2	237.51	135.72
GIL980	379.2	275	209.82	99.16
GIL990	315.14	226.03	170.96	80.03
J980_990	25858.76	16647.5	11728.87	4354.34
J1020	25803.91	16638.62	11719.24	4352.88

Table 3 – Developed Conditions with Detention Pond Hydrologic Results

HMS Element ID	Developed Conditions 100-Year Peak Flow (cfs)	Developed Conditions 25-Year Peak Flow (cfs)	Developed Conditions 10-Year Peak Flow (cfs)	Developed Conditions 2-Year Peak Flow (cfs)
GIL970	417.26	301.48	229.11	108.06
J970	2164.42	1500.71	1127.26	564.69
J970_975	25812.95	16625.03	11718.42	4351.84
Site	388.46	294.2	237.51	135.72
Pond	174.2	91.25	48.09	23.3
GIL980	379.2	275	209.82	99.16
GIL990	315.14	226.03	170.96	80.03
J980_990	25873.62	16657.36	11730.9	4357.48
J1020	25818.76	16648.54	11721.27	4356.02

Table 4 – Comparison of Hydrologic Results for the 100-Year Storm

HMS Element ID	Existing Condtion Peak Flow (cfs)	Developed Condtion Peak Flow (cfs)	Developed Condtion w/ Pond Peak Flow (cfs)	Existing Condition Peak Time	Developed Condition Peak Time	Developed Condition w/ Pond Peak Time
GIL970	464.56	417.26	417.26	12:30	12:27	12:27
J970	2244.26	2164.42	2164.42	12:46	12:46	12:46
J970_975	25824.87	25812.95	25812.95	14:28	14:28	14:28
Site	N/A	388.46	388.46	N/A	12:04	12:04
Pond	N/A	N/A	174.2	N/A	N/A	12:11
GIL980	355.52	379.2	379.2	12:20	12:17	12:17
GIL990	544.23	315.14	315.14	12:20	12:39	12:39
J980_990	25851.7	25858.76	25873.62	14:35	14:35	14:35
J1020	25796.93	25803.91	25818.76	14:39	14:39	14:39

3.0 CONCLUSIONS

Based on the Gilleland Creek hydrologic analysis performed for the Cold Site development, it can be concluded that construction of stormwater detention on the Cold Site property would not achieve the goals of the drainage policy requirements for developments within the City of Manor. Stormwater detention is not estimated to have any measurable effect on peak flows when compared to

developed conditions without detention. As shown, the increased flows due to development have a negligible effect on downstream flows in the main stem of Gilleland Creek (less than 0.1%). This is due to the small flows from Cold Site compared to the overall flow of Gilleland Creek, and the fact that the peak flow arrives from developed conditions earlier than existing conditions. In contrast, the pond releases its flow later, contributing more flow to the peak flow of the main stem. With the flows leaving the project site calculated at approximately 1.5% of the peak flows in the main stem of Gilleland Creek, there is no change to the time to peak in the Gilleland main stem for all scenarios studied in this analysis.

Based on the above analysis, it is concluded that the most prudent and cost effective method for meeting the City of Manor's drainage policy goals for the Cold Site development is to develop the property as proposed, without the inclusion of on-site detention. Results of this hydrologic analysis indicate that this development strategy for this site would not increase peak flows or effect the Gilleland Creek Watershed's timing of peak runoff.

HEC HMS Gilleland Creek Existing Conditions Parameters

Basin ID	Drainage Area (sq mi)	Curve Numver	Impervious Cover (%)	Tc (min)	Lag Time (min)
GIL970	0.133	84	6	47	28
GIL980	0.083	84	5	32	19
GIL990	0.127	84	6	32	19

HEC HMS Gilleland Creek Proposed Conditions Parameters

Basin ID	Drainage Area (sq mi)	Curve Numver	Impervious Cover (%)	Tc (min)	Lag Time (min)
GIL970	0.1123	84	6	42	25
GIL980	0.0813	84	5	27	16
GIL990	0.1055	84	6	62	37
SITE*	0.0441	84	85	5	3

*The difference in drainage area for GIL970, GIL980, and GIL990 is due to the inclusion of the site drainage area, which is part of all three basins in the existing conditions

LIST OF FIGURES

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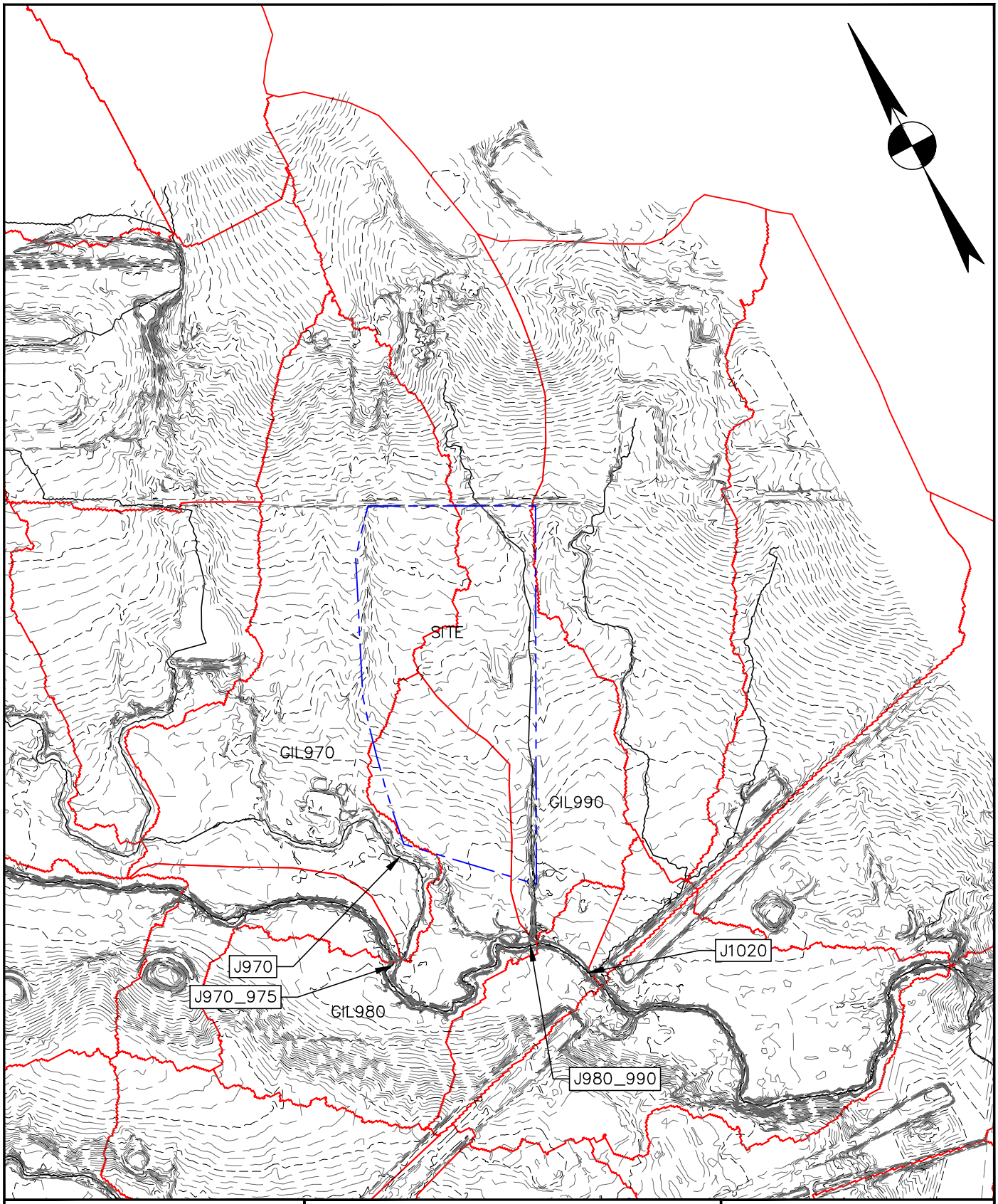
Figure 1

EXISTING CONDITIONS BASIN MAP



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TBPE # F-14629

COLD SITE
HILL LN

RYAN COMPANIES

FIGURE 1

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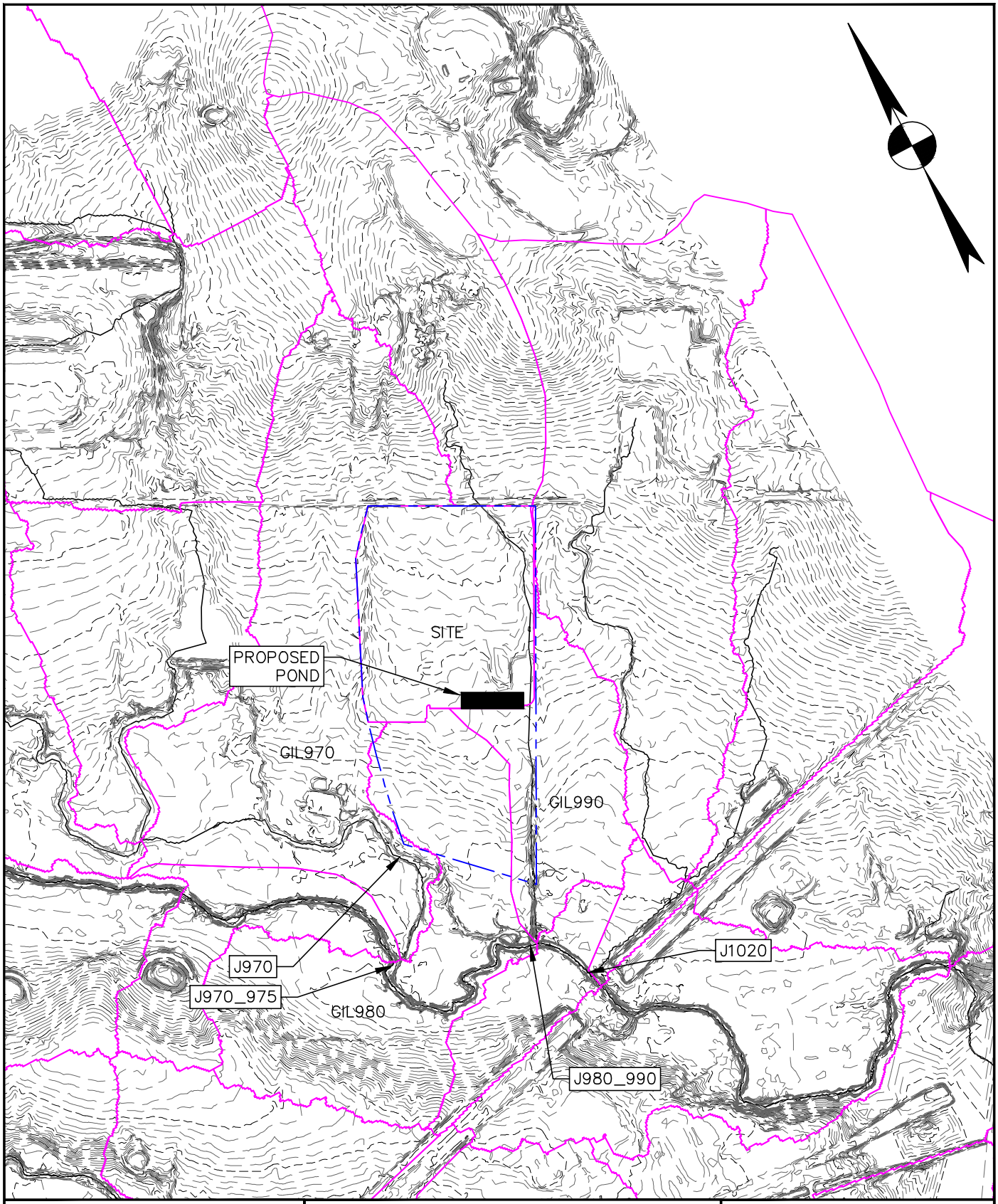
Figure 2

DEVELOPED CONDITIONS BASIN MAP



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COLD SITE
HILL LN

RYAN COMPANIES

FIGURE 2

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