MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Water Protection Bureau
P.O. Box 200901
Helena, MT 59620-0901

Permit Fact Sheet
Montana Ground Water Pollution Control System (MGWPCS)

Permittee:	FCA Rentals, LLC
Permit Number:	MTX000220
Facility Name:	Glacier Park International Airport Rental Car Facility Carwash
Facility Location:	Section 03, Township 29 North, Range 21 West; Latitude: 48.30431º North; Longitude: 114.25583º West; Flathead County
Facility Contact:	Andy Wilcox, Owner/Representative
Receiving Water:	Class I Ground Water
Number of Outfalls:	One
Outfall/Type:	001 – Infiltration Pond – Industrial/Other Wastewater

I. PERMIT STATUS

The following fact sheet outlines the basis for renewing an existing MGWPCS wastewater discharge permit to FCA Rentals LLC (permittee) for the Glacier Park International Airport Rental Car Facility Carwash (facility). The MGWPCS permit application and supplemental materials provide the information that serves as the basis for the development of the effluent limits and the monitoring requirements outlined within this fact sheet. The scope of this permitting action is for the operation and maintenance of the existing wastewater treatment and disposal system.

A. Application Information

The original permit was first issued on May 03, 2011. The permittee submitted an application to renew their existing permit on November 24, 2015. On December 04, 2015, DEQ determined that the application was complete and the existing permit was administratively continued.

B. Facility Operations Update

The facility became operational in 2011. The system was soon deemed to be operating at a significant net loss of water due to vehicle drive-off and evaporation. The lack of wastewater accrual has resulted in no discharge events being reported to DEQ. The permittee has expressed their intent in maintaining their current operations.

C. Permit Changes

DEQ established a mixing zone (Section III) and identified effluent parameters of concern (Section IV) within the 2011 permit. The respective administrative record however did not correctly identify and authorize dilution for lead as allowed by rule. The record also did not correctly identify the applicable water quality standard for lead. This has been addressed within Section IV of this fact sheet. These updates are reflected within the proposed final effluent limitations (Table 4 of Section IV).

The 2011 permit required effluent monitoring of metal parameters (Section V). The reporting unit for these parameters have been updated from milligrams per liter to micrograms per liter to provide consistency with the water quality standards (Section IV).

II.FACILITY INFORMATION

A. Facility Location

The facility is located seven miles north of Kalispell, MT on U.S. Highway #2. It is located just south of the Glacier Park International Airport.

B. Facility and Operations

The facility consists of a 2-bay 5-touch wash system manufactured by NS Wash Systems. Wash water drains into an in-bay subfloor sump system where it is recycled through a series of baffled settling/storage tanks for reuse. The system was designed in anticipation of a discharge of approximately 100 gallons per day so that clean water could be added to the recycled water in the system. Therefore in addition to the wash system, a HydroKleen filter system by Hydro Engineering was installed for the purpose of treating discharged wastewater. A line diagram is included as Figure 4.

Current operations of the facility have not resulted in any reported discharge events since 2011. The permittee is however authorized to discharge wastewater to an infiltration pond located 130 feet to the northeast of the car wash building. Information on the wastewater disposal system is provided within Table 1.

Table 1: Collection, Treatment, and Disposal System Summary	
Outfall 001 - Industrial/Other Wastewater	
Method of Disposal: Infiltration to ground water	
Disposal Structure: Infiltration Pond (Outfall 001) Southwest Qtr of Section 03, Township 29 North, Range 21 West Latitude: 48.30458º North; Longitude: 114.25542º West	
Contributing Sources of Wastewater Standard Industrial Code(s) (SIC) of contributing sources: 7542 - Carwashes	
Average Daily Design Flow (gpd): 100 (ft^3/day): 13.4	Daily Maximum Design Flow (gpd): 100 (ft^3/day): 13.4
Effluent Sampling Location: EFF-001: Prior to discharge.	
Flow Monitoring Equipment: FM-001: Located in a riser in between the carwash/treatment building and the infiltration pond (Installed 2011).	
Wastewater Treatment: HydroKleen filter system (Model DPL 30).	

C. Effluent Characteristics

There have been no reported discharges to date. Effluent characterization was initially collected by the permittee on December 21, 2010, which was included within the original administrative record (DEQ, 2011).

D. Hydrogeologic Characteristics

The facility is located on the Evergreen aquifer which is generally described as being located in between the Whitefish and Flathead Rivers of the Flathead Valley. This shallow aquifer generally flows with the rivers (north to south) and may daylight near the confluence of the Stillwater and Flathead Rivers (LaFave, 2004). Aquifer recharge is primarily from precipitation and surficial water losses from local surface waters (Konizeski, 1968).

The aquifer is approximately 28 feet thick, and is primarily composed of unconsolidated alluvial gravel, with minor amounts of sand, and silt. This unconfined aquifer is underlain by glacial till and glacio-lacustrine sediment deposits which tend to have low permeability (LaFave, 2004).

Site-specific information gathered from the facility area generally supports the above description of the regional shallow aquifer. The top contact of the water bearing zone is approximately ten feet in depth and is unconfined. The top contact of the underlying confining unit is approximately at 30 to 44 feet in depth.

Shallow on-site monitoring wells (Section II.E) were used to estimate a site-specific ground water flow direction (E28°S to E40°S), a hydraulic gradient (0.00075 ft/ft), and a hydraulic conductivity (328 ft/day). A ground water flow map, borehole lithologic logs, aquifer tests, and a geotechnical report can be respectively found in Figure 3, Figure 5, Appendix II, and Appendix III of this fact sheet document.

E. Ground Water Monitoring Wells

There are three shallow monitoring wells located on-site or in the immediate vicinity of the facility. Information regarding these monitoring wells have been summarized and listed in Table 2. A well map has been included as Figure 3; please note that MW-3 is identified on the map as “proposed monitoring well locale”.

Table 2: Monitoring Well Summary
Monitoring Well: MW-1
MBMG GWIC #: 180241
Status: Active irrigation well.
Location: 150 feet to the north of Outfall 001 (discharge pipe). Latitude: 48.30504º North Longitude: 114.25516º West
Representation: Upgradient from infiltration pond.
Monitoring Well: MW-2
MBMG GWIC #: 253701
Status: Unknown
Location: 585 feet to the south of Outfall 001 (discharge pipe). Latitude: 48.30291º North Longitude: -114.25529º West
Representation: Sidegradient from the northwest end of the infiltration pond (end-of-pipe discharge location). Due to the width of the infiltration pond, there is a potential to be seasonally downgradient from the southeast side (furthest from discharge pipe) of the infiltration pond.
Monitoring Well: MW-3
MBMG GWIC #: 137856
Status: Unknown
Location: 900 feet southwest of Outfall 001 (discharge pipe). Latitude: 48.302909º North Longitude: -114.257740º West
Representation: Downgradient from the infiltration pond.

F. Ground Water Quality Characteristics

The 2011 permit did not establish recurring ground water monitoring during the permit cycle. The permittee however did sample and report water quality for MW-1 as part of application materials in order to renew permit coverage (Permit Part IV.D., Duty to Reapply). These ground water quality results are summarized in Appendix I.

III.MIXING ZONE

The Montana Water Quality Act (75-5-103, Montana Code Annotated (MCA)) states that a mixing zone is an area of the receiving water, established in a permit, where the water quality standards may be exceeded. DEQ authorized a mixing zone in 2011. The existing mixing zone rationale has been updated to include all parameters of concern (total dissolved solids and lead). A summary of the mixing zone can be found within Table 3 below.

Table 3: Mixing Zone Information - Outfall 001		
Parameter	**Units**	**Value**
Mixing Zone Type	-	Standard
Authorized Parameters	-	Total Dissolved Solids Lead
Ambient Ground Water Concentrations	mg/L	TDS - 229 mg/L Pb - Not Detected
Ground Water Flow Direction	azimuth/bearing	E28°S to E40°S
Length of Mixing Zone	feet	500
Thickness of Mixing Zone	feet	15
Outfall Width, Perpendicular to Ground Water Flow Direction	feet	40
Width of Mixing Zone at Down Gradient Boundary	feet	127.5
Cross Sectional Area of Mixing Zone (A)	ft^2	1912.5
Hydraulic Conductivity (K)	feet/day	328
Hydraulic Gradient (I)	ft/ft	0.00075
Volume of Ground Water Available for Mixing (Q_{gw})	ft^3/day	471

IV.PROPOSED DISCHARGE LIMITATIONS AND CONDITIONS

DEQ has a statutory duty to develop effluent limits and issue permits consistent with the Montana Water Quality Act, §75-5-101, MCA et seq. and rules adopted under that Act. The bases for deriving and establishing effluent limitations were first established by DEQ in 2011. The effluent limitations have been updated using updated ambient ground water quality information, available dilution, and applicable ground water quality standards as further discussed in Appendix IV. The proposed effluent limitations are listed below in Table 4.

Table 4: Proposed Final Effluent Limits – Outfall 001			
Parameter	**Units**	**Daily Maximum**(1)	**Rationale**
Total Dissolved Solids (TDS)	mg/L	10,026	Established by DEQ within the 2011 permit. ARM 17.30.1006(1)(b)(ii)
Lead	µg/L	0.081	Established by DEQ within the 2011 permit. ARM 17.30.715(1)(c)
Footnotes: (1) See definition in Part V of permit.			

V.RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

DEQ has a statutory duty to develop effluent limits and issue permits consistent with the Montana Water Quality Act, §75-5-101, MCA et seq. and rules adopted under that Act. ARM 17.30.1031 requires that all issued MGWPCS permits contain monitoring requirements that assure compliance with the developed numeric effluent limitations and therefore water quality standards. Effluent monitoring requirements were established by DEQ in 2011. These requirements will be maintained. Monitoring requirements and respective rationale are summarized in Appendix VI.

VI.SPECIAL CONDITIONS

Special conditions have not been established.

VII.COMPLIANCE SCHEDULE

A compliance schedule has not been established.

VIII.NONSIGNIFICANT DETERMINATION AND REASONABLE POTENTIAL ANALYSIS

DEQ has determined (DEQ, 2011) that the activity is a new or increased source resulting in a change of existing water quality occurring on or after April 29, 1993 (ARM 17.30.702). The applicable water quality standards for Class I or II ground water and nondegradation provisions are summarized in Appendix IV. Discharges in compliance with the limitations of this permit are considered nonsignificant. The permit includes monitoring, reporting and corrective action requirements to establish, confirm, and maintain compliance with the permit limits.

IX.PUBLIC NOTICE

Legal notice information for water quality discharge permits are listed at the following website: http://deq.mt.gov/Public/notices/wqnotices. Public comments on this proposal are invited any time prior to close of business on **April 10, 2018**. Comments may be directed to:

DEQWPBPublicComments@mt.gov

or at:

Water Protection Bureau
PO Box 200901
Helena, MT 59620

All comments received or postmarked prior to the close of the public comment period will be considered in the formulation of the final permit. DEQ will respond to all substantive comments pertinent to this permitting action and may issue a final decision within thirty days of the close of the public comment period.

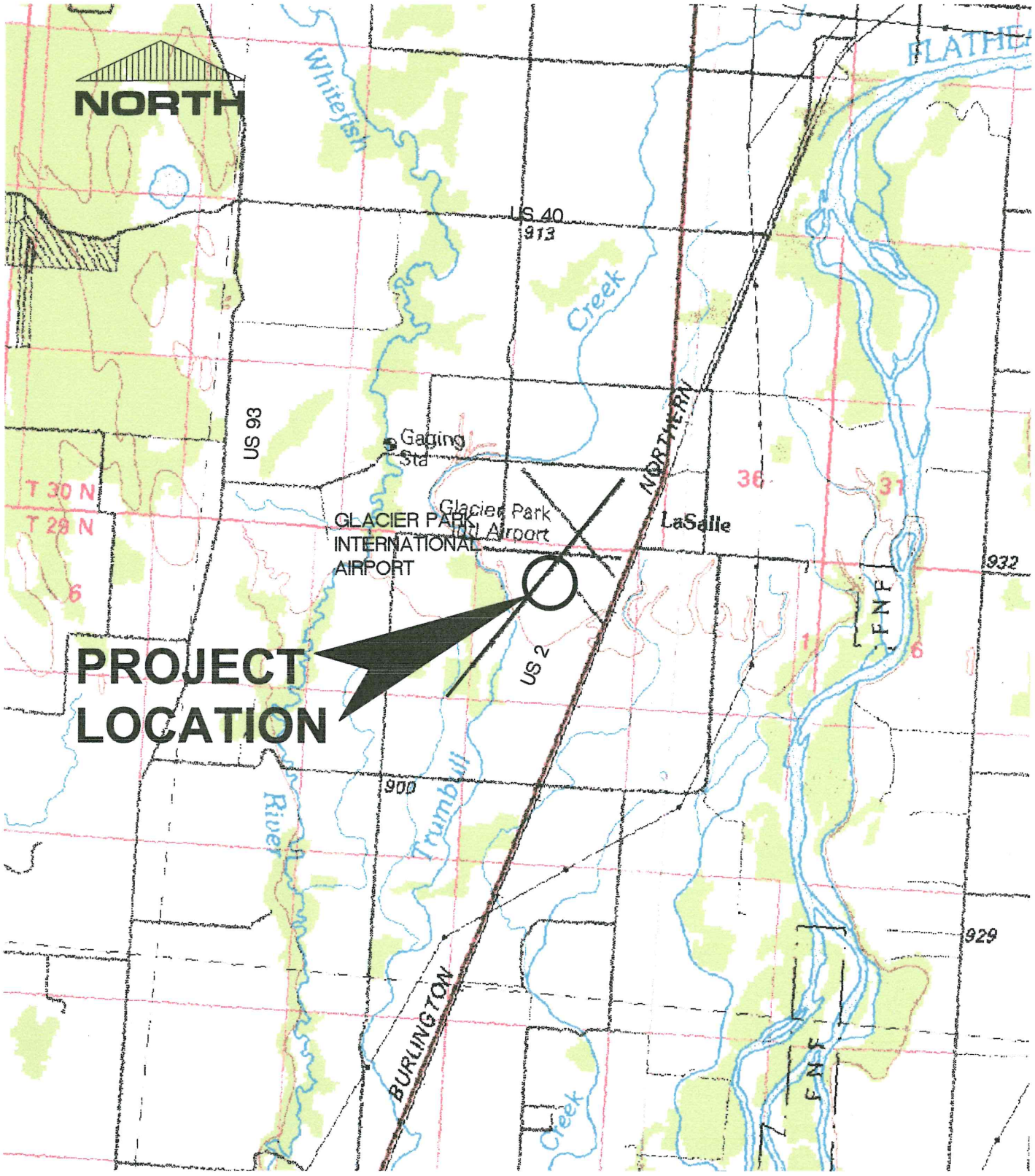
All persons, including the applicant, who believe any condition of the draft permit is inappropriate, or that DEQ's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, shall raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period (including any public hearing). All public comments received for this draft permit will be included in the administrative record and will be available for public viewing during normal business hours.

Copies of the public notice were mailed to the applicant, state and federal agencies and interested persons who have expressed interest in being notified of permit actions. A copy of the distribution list is available in the administrative record for this draft permit. Electronic copies of the public notice, draft permit, fact sheet, and draft environmental assessment are available at the following website: http://deq.mt.gov/Public/notices/wqnotices.

Any person interested in being placed on the mailing list for information regarding this permit may contact the DEQ Water Protection Bureau at (406) 444-3080 or email DEQWPBPublicComments@mt.gov. All inquiries will need to reference the permit number (MTX000220), and include the following information: name, address, and phone number.

During the public comment period provided by the notice, DEQ will accept requests for a public hearing. A request for a public hearing must be in writing and must state the nature of the issue proposed to be raised in the hearing.

FIGURE 1 - Vicinity Map



BILLMAYER & HAFFERMAN, INC.
2191 THIRD AVENUE EAST
KALISPELL, MT 59901
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

DRAWING TITLE:

VICINITY MAP

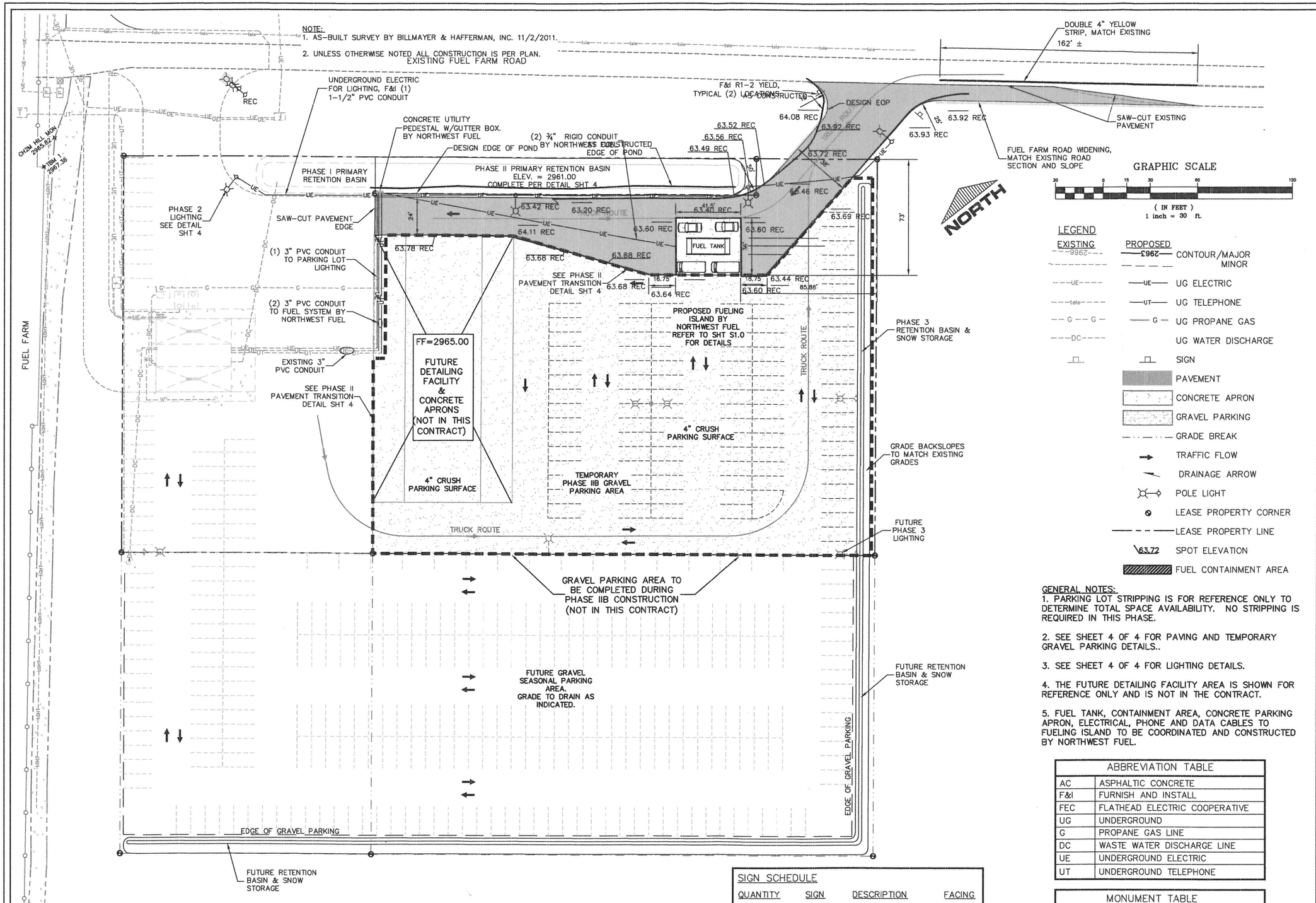
FOR

GPIA RENTAL CAR FACILITY OWNERS

SECTION 3
T. 29N., R. 21W., P.M., M., FLATHEAD COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
April 8th, 2010	G.57.2		
FILE LOCATION: G.57.3/DWG	DRAWN BY: NJF	APPROVED BY: KMH	1 OF 1

FIGURE 2 - Site Plan



SITE PLAN

SIGN SCHEDULE

QUANTITY	SIGN	DESCRIPTION	FACING
(2)	R1-2	YIELD	SOUTH

GENERAL NOTES:

1. PARKING LOT STRIPPING IS FOR REFERENCE ONLY TO DETERMINE TOTAL SPACE AVAILABILITY. NO STRIPPING IS REQUIRED IN THIS PHASE.

2. SEE SHEET 4 OF 4 FOR PAVING AND TEMPORARY GRAVEL PARKING DETAILS..

3. SEE SHEET 4 OF 4 FOR LIGHTING DETAILS.

4. THE FUTURE DETAILING FACILITY AREA IS SHOWN FOR REFERENCE ONLY AND IS NOT IN THE CONTRACT.

5. FUEL TANK, CONTAINMENT AREA, CONCRETE PARKING APRON, ELECTRICAL, PHONE AND DATA CABLES TO FUELING ISLAND TO BE COORDINATED AND CONSTRUCTED BY NORTHWEST FUEL.

ABBREVIATION TABLE	
AC	ASPHALTIC CONCRETE
F&I	FURNISH AND INSTALL
FEC	FLATHEAD ELECTRIC COOPERATIVE
UG	UNDERGROUND
G	PROPANE GAS LINE
DC	WASTE WATER DISCHARGE LINE
UE	UNDERGROUND ELECTRIC
UT	UNDERGROUND TELEPHONE

MONUMENT TABLE			
NAME	NORTHING	EASTING	ELEV.
CH2M	1513372.65	812128.36	2965.88
TBM1	1513362.32	812111.94	2967.36

REVISIONS		
DATE	DESCRIPTION	BY
8/1/11	ISSUED FOR BID	N.K.
8/11/11	Revised-divided Phase II INTO 2 Phases	N.K.
	ISSUED FOR CONSTRUCTION	

DRAWN BY: APPROVED BY: KMH

GPIA RENTAL CAR FACILITY EXPANSION, PH 3

FOR

FCA RENTALS, LLC

SECTION 3, T.29N., R.21W., P.M., M., FLATHEAD COUNTY, MONTANA

BILLMAYER & HAFFERMAN, INC.
2191 THIRD AVE. E. KALISPELL, MT. 59901
PHONE: (406) 257-8708
FAX: (406) 257-8710
EMAIL: info@billmayer.com
ONLINE: http://www.billmayer.com

DRAWING TITLE:

SITE PLAN

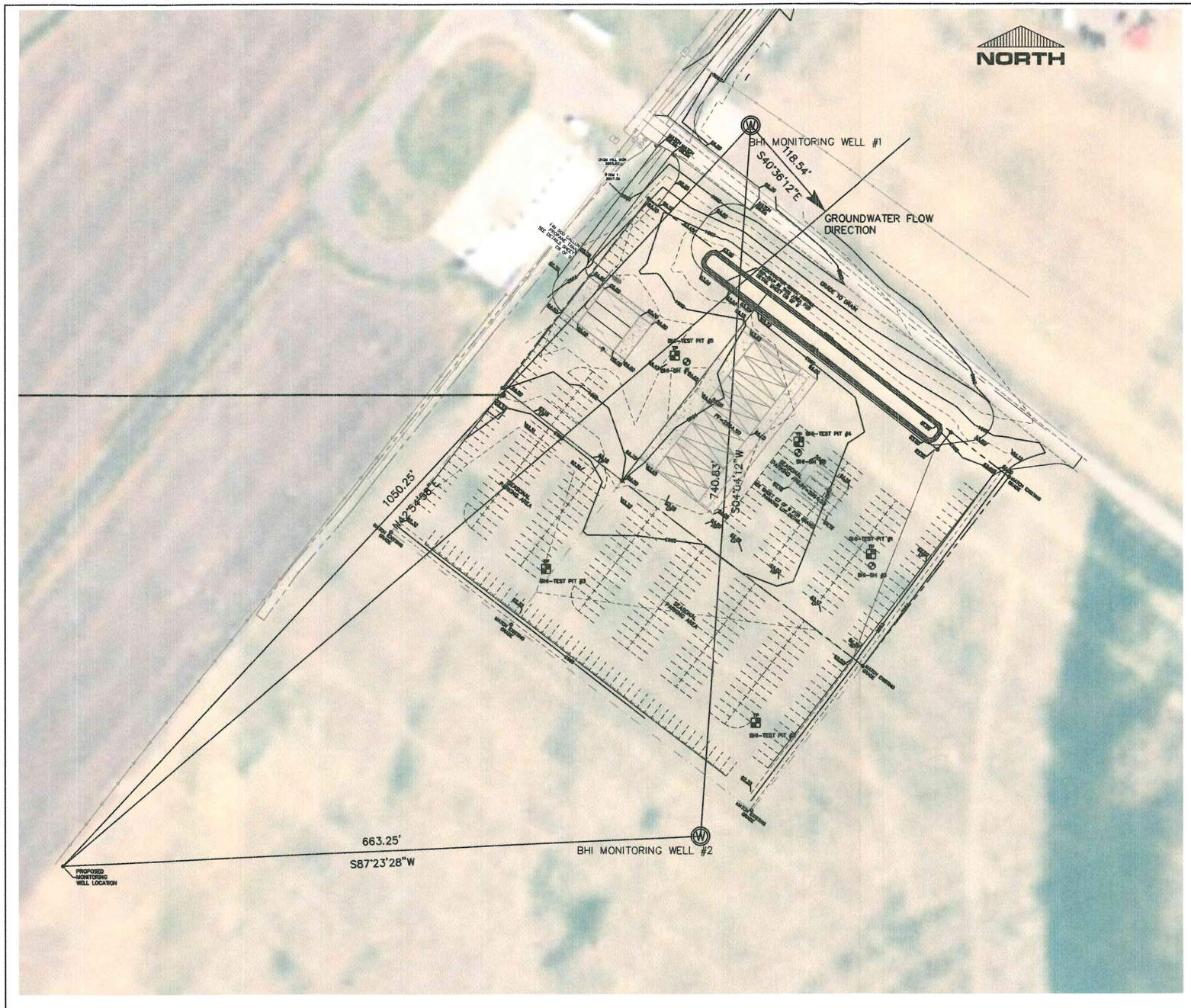
SCALE: AS SHOWN

DATE: March 20, 2012 PROJECT NO: G.57.8

DRAWING NUMBER:

C1 OF 4

FIGURE 3 – Ground Water Flow Map

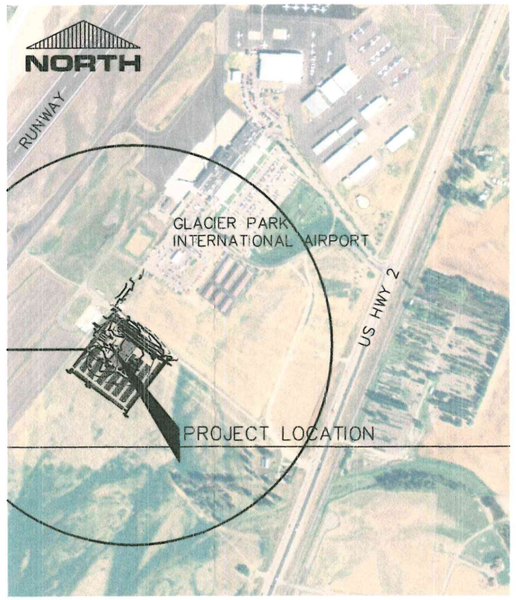


GROUNDWATER FLOW DIRECTION
1" = 60'

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.



VICINITY MAP
1" = 500'

REVISIONS DATE	DESCRIPTION	BY
5/10/10	BORE HOLE LOCATION MAP	NJF

DRAWN BY: NJF APPROVED BY: KMH

GPIA RENTAL CAR FACILITY EXPANSION, PH I

FOR

FCA RENTALS, LLC

SECTION 3, T.29N., R.21W., P.M., FLATHEAD COUNTY, MONTANA

BILLMAYER & HAFFERMAN, INC.
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FAX: (406) 257-8710
EMAIL: info@billmeyer.com
ONLINE: http://www.billmeyer.com

DRAWING TITLE:
GROUNDWATER MAP

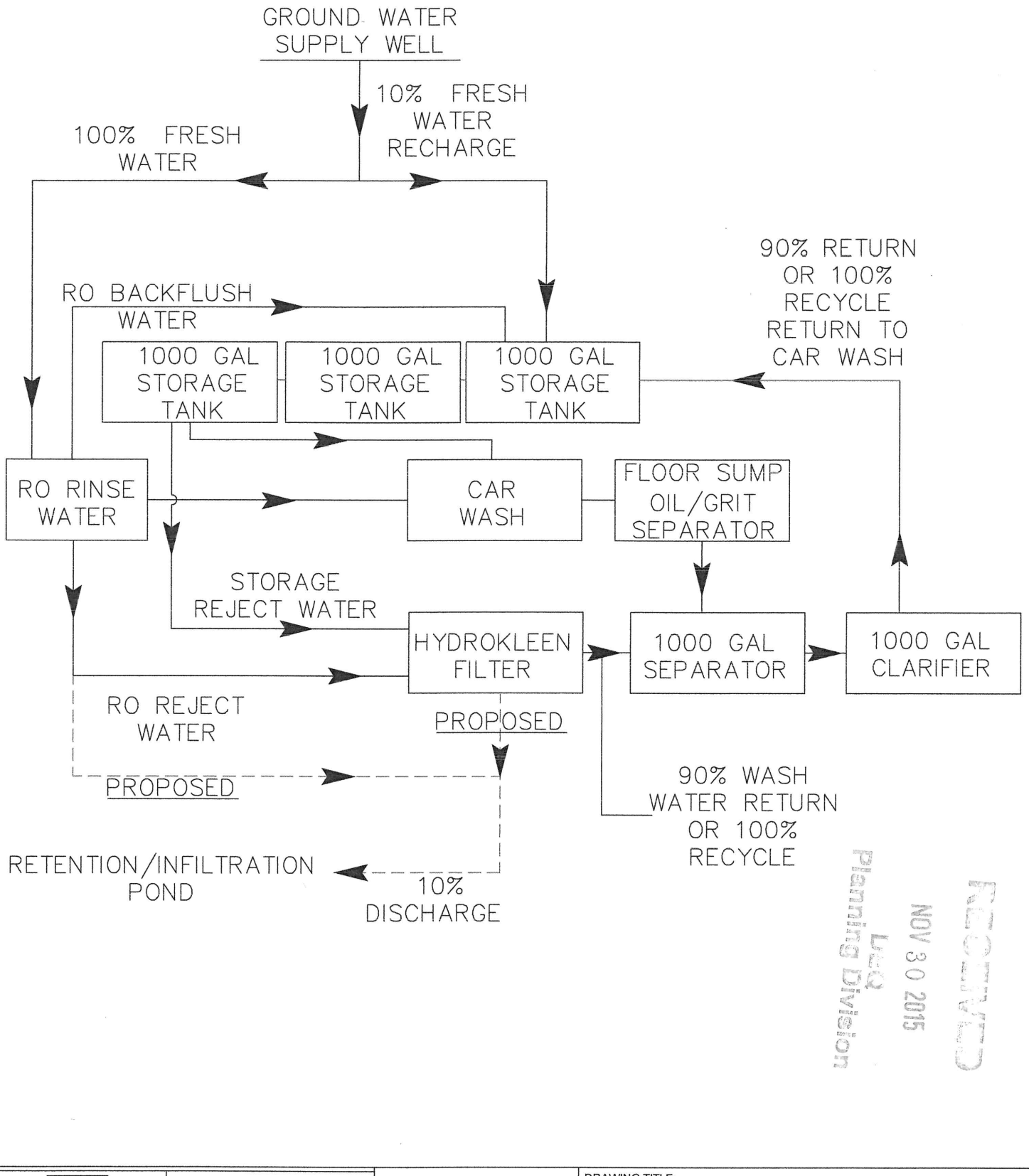
SCALE: AS SHOWN

DATE: JUNE 2010

PROJECT NO: G.57.4

DRAWING NUMBER:
1 OF 1

FIGURE 4 - Line Diagram



BILLMAYER & HAFFERMAN, INC.
2191 THIRD AVENUE EAST
KALISPELL, MT 59901
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

DRAWING TITLE:

ONE LINE WASH FACILITY DIAGRAM

FOR

GPIA RENTAL CAR FACILITY OWNERS

SECTION 3
T. 29N., R. 21W., P.M., M., FLATHEAD COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
April 8th, 2010	G.57.2		
FILE LOCATION: G.57.3/DWG	DRAWN BY: NJF	APPROVED BY: KMH	1 OF 1

FIGURE 5 - Well Logs

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (8/4/2009 7:59:40 AM)

Site Name: FMAA
GWIC Id: 180241

Section 1: Well Owner(s)

1) F.M.A.A. (MAIL)
4170 HWY 2 E.
KALISPELL MT 59901 [09/22/1999]

Section 2: Location

Township	Range	Section	Quarter Sections
29N	21W	3	SW¼ SW¼ NE¼

County	Geocode
FLATHEAD	

Latitude	Longitude	Geomethod	Datum
48.306618	-114.254008	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot

Section 3: Proposed Use of Water

IRRIGATION (1)

Section 4: Type of Work

Drilling Method: CABLE
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Wednesday, September 22, 1999

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
-3	25	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-3	25	6				STEEL

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
24	25	6		1/4X1/4	TORCH CUTS

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	18	BENTONITE	

Section 7: Well Test Data

Total Depth: 25
Static Water Level: 10
Water Temperature:

Air Test *

100 gpm with drill stem set at _ feet for 1 hours.
Time of recovery 4 hours.
Recovery water level 10 feet.
Pumping water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

111ALVM - ALLUVIUM (HOLOCENE)

Lithology Data

There are no lithologic details assigned to this well.

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: MONTANA
License No: -
Date Completed: 9/22/1999

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps

Site Name: GRIGG MELVIN
GWIC Id: 253701

Section 1: Well Owner(s)

1) GRIGG, MELVIN (MAIL)
25 GRIGG ROAD
KALISPELL MT 59901 [12/04/2009]
2) GRIGG, MELVIN (WELL)
75 GRIGG ROAD
KALISPELL MT 59901 [12/04/2009]

Section 2: Location

Township	Range	Section	Quarter Sections
29N	21W	3	NE¼ SE¼

County	Geocode
FLATHEAD	

Latitude	Longitude	Geomethod	Datum
48.303825	-114.247182	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date
2961	LIDAR	NAVD88	8/12/2015

Addition	Block	Lot
#169		1

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Friday, December 04, 2009

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	30	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-1.5	28.5	6	0.25		WELDED	A53B STEEL

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
28.5	28.5	6			OPEN BOTTOM

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	0	BENTONITE	Y

Section 7: Well Test Data

Total Depth: 28.5
Static Water Level: 12
Water Temperature:

Air Test *

25 gpm with drill stem set at 20 feet for 1 hours.
Time of recovery 0.25 hours.
Recovery water level 12 feet.
Pumping water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

Unassigned

From	To	Description
0	12	GRAVEL, SAND, CLAY
12	30	GRAVEL, SAND, WATER

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: MARVIN SUDAN
Company: SUDAN DRILLING
License No: WWC-450
Date Completed: 12/4/2009

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (8/4/2009 8:00:45 AM)

Site Name: IVERSON GERRY
GWIC Id: 137856

Section 1: Well Owner(s)

1) IVERSON, GERRY (MAIL)
BOX 2445
COLUMBIA FALLS MT 59912 [05/28/1993]

Section 2: Location

Township	Range	Section	Quarter Sections
29N	21W	3	SW¼ SW¼

County	Geocode
FLATHEAD	

Latitude	Longitude	Geomethod	Datum
48.300102	-114.263565	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: CABLE
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Friday, May 28, 1993

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2	25	6				STEEL

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
25	25	6			OPEN BOTTOM *

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	18	BENTONITE	

Section 7: Well Test Data

Total Depth: 25
Static Water Level:
Water Temperature:

Pump Test *

Depth pump set for test _ feet.
30 gpm pump rate with _ feet of drawdown after 2 hours of pumping.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level 10 feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

111ALVM - ALLUVIUM (HOLOCENE)

From	To	Description
0	3	TOPSOIL
3	5	GRAVELS
5	10	BROWN CLAY & GRAVELS
10	20	LIGHT BROWN CLAY & GRAVELS & WATER
20	25	LIGHT BROWN CLAY & GRAVELS & MORE WATER

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: MONTANA
License No: WWC-488
Date Completed: 5/28/1993

APPENDIX I - GROUND WATER QUALITY MONITORING RESULTS

Ground Water Monitoring Results

Monitor Source[1]	Representation	Parameter	Units	Reported Average or Median Value	# of Samples	Source of Data
MW1	Ambient Ground Water Quality	Chloride (as Cl)	mg/L	10.6	3	APP
		pH	s.u.	7.8	3	APP
		Specific Conductivity (@ 25°C)	µS/cm	386	3	APP
		Sulfate	mg/L	2.9	3	APP
		Total Dissolved Solids (TDS)	mg/L	229	3	APP
		Total Petroleum Hydrocarbons (TPH)	mg/L	<0.1	3	APP
		Arsenic	µg/L	<0.001	3	APP
		Copper	µg/L	<0.005	3	APP
		Lead (Pb)	µg/L	<0.001	3	APP
		Zinc	µg/L	<0.01	3	APP

Footnotes:

APP = Application Form GW-2 and supplemental materials.

Period of Record: 04/2015 through 10/2015.

s.u. = standard units

(1) Refer to Section II of the Fact Sheet for the existing or proposed location of the monitoring wells.

APPENDIX II – HYDROGEOLOGIC INFORMATION

BILLMAYER & HAFFERMAN, Inc.

HYDRAULIC TRANSMISSIVITY AND CONDUCTIVITY

SITE NAME: GPIA Rental Car Facility Expansion
COUNTY: Flathead
LOT#:
NOTES: Retention Pond Infiltration

Date 2/19/2010

(re: applied hydrogeology, 3rd Edition, C.W. Fetter, pg.257)
[T=(33.6((Q*192.5)/S)^0.67)] [K=T/b] [S=PWL-SWL]

	GWIC# WELL 1 (#180241)	GWIC# WELL 2 (#253701)	GWIC# WELL 3 (#137856)
Q (gpm)	100	25	30
Static Water Level (ft)	10	12	8
Pumping Water Level (ft)	20	20	10
b - Aquifer Thickness (ft)	15	15	15
Aquifer-	111 ALVM	N.R.	111 ALVM
T - TRANSMISSIVITY (ft^2/day)	5332.22	2446.01	6996.63
K - CONDUCTIVITY (ft/day)	355.48	163.07	466.44

AVERAGE CONDUCTIVITY (ft/day) **328.33**

(re: Groundwater and Wells, Second Edition, Driscoll, pg.1021)
[conf. T=Q(2000)/S * .134] [unconf. T=Q(1500)/S * .134] [K=T/b] [S=PWL-SWL]

UNCONFINED TRANSMISSIVITY (gpd/ft)	15000.00	4687.50	22500.00
CONFINED TRANSMISSIVITY (gpd/ft)	20000.00	6250.00	30000.00
UNCONFINED TRANSMISSIVITY (ft^2/day)	2010.00	628.13	3015.00
CONFINED TRANSMISSIVITY (ft^2/day)	2680.00	837.50	4020.00
UNCONFINED CONDUCTIVITY (ft/day)	134.00	41.88	201.00
CONFINED CONDUCTIVITY (ft/day)	178.67	55.83	268.00

AVERAGE CONDUCTIVITY (UNCONFINED) (ft/day)	125.63
AVERAGE CONDUCTIVITY (CONFINED) (ft/day)	167.50

G.57.2 CPIA Rental Car Facility Expansion
Monitoring Well Logs

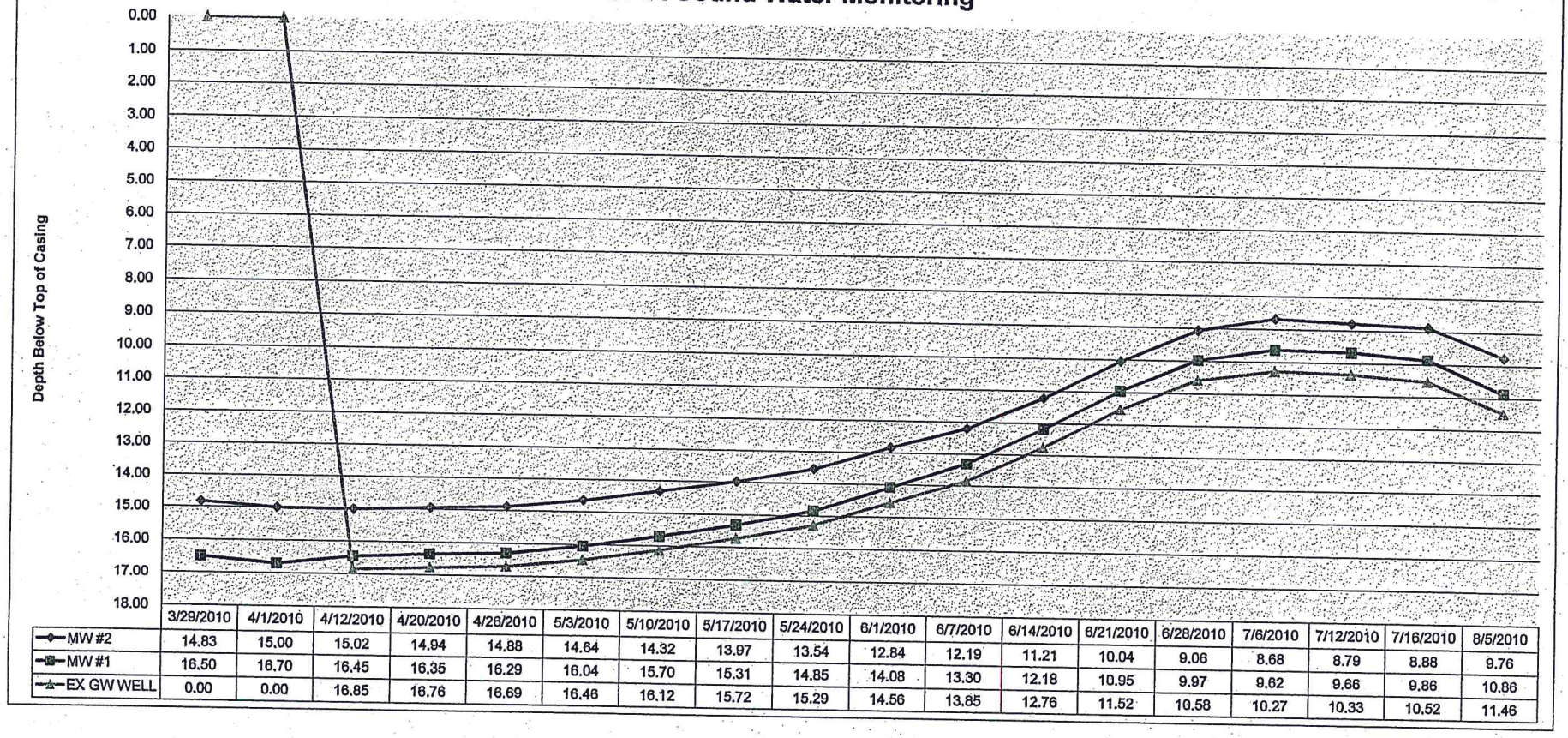
		(ft)			(ft)		
North Well, #1	Total Depth=	25.4	South Well, #2	Total Depth=	25.9	Ex Irr Well	Total Depth=
	Pipe Stick Up	1		Pipe Stick Up	0.75		Pipe Stick Up
	Net Depth=	24.4		Net Depth=	25.15		Net Depth=

Date	Well #1	Δ Elevation**	Well #2	Δ Elevation**	Ex Irr Well	Δ Elevation**
3/29/2010	16.50		14.83		NR	
4/1/2010	16.70	-0.200	15.00	-0.170	NR	
4/12/2010	16.45	0.250	15.02	-0.020	16.85	
4/20/2010	16.35	0.100	14.94	0.080	16.76	0.090
4/26/2010	16.29	0.060	14.88	0.060	16.69	0.070
5/3/2010	16.04	0.250	14.64	0.240	16.46	0.230
5/10/2010	15.70	0.340	14.32	0.320	16.12	0.340
5/17/2010	15.31	0.390	13.97	0.350	15.72	0.400
5/24/2010	14.85	0.460	13.54	0.430	15.29	0.430
6/1/2010	14.08	0.770	12.84	0.700	14.56	0.730
6/7/2010	13.30	0.780	12.19	0.650	13.85	0.710
6/14/2010	12.18	1.120	11.21	0.980	12.76	1.090
6/21/2010	10.95	1.230	10.04	1.170	11.52	1.240
6/28/2010	9.97	0.980	9.06	0.980	10.58	0.940
7/6/2010	9.62	0.350	8.68	0.380	10.27	0.310
7/12/2010	9.66	-0.040	8.79	-0.110	10.33	-0.060
7/16/2010	9.86	-0.200	8.88	-0.090	10.52	-0.190
8/5/2010	10.86	-1.000	9.76	-0.880	11.46	-0.940
	SUM	5.640	SUM	5.070	SUM	5.390

Transducer set	5/24/2010	16.33'	T.O.C.
Adjusted	6/1/2010	21.33'	T.O.C.
Removed	8/5/2010		

* All measurements are to top of casing
** Indicates a weekly change in the groundwater level

GPIA Gound Water Monitoring



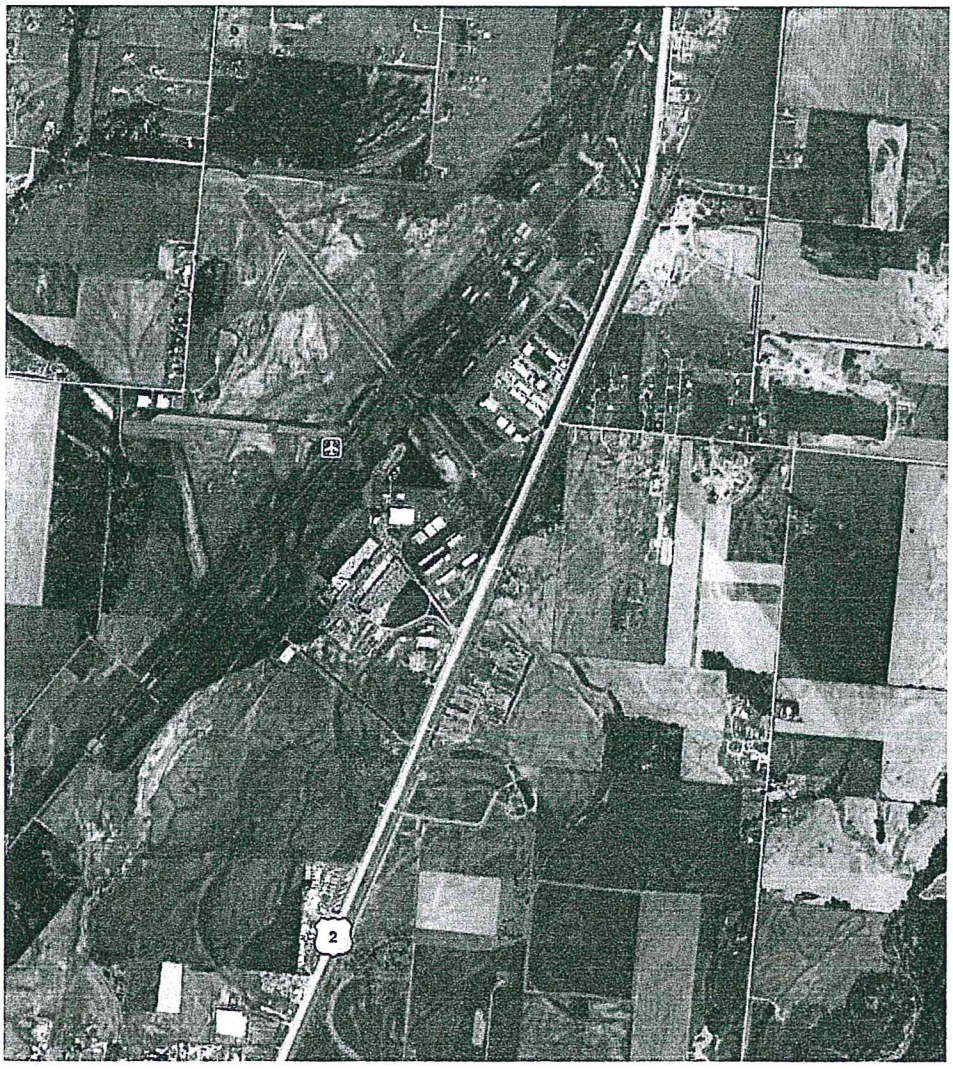
	3/29/2010	4/1/2010	4/12/2010	4/20/2010	4/26/2010	5/3/2010	5/10/2010	5/17/2010	5/24/2010	6/1/2010	6/7/2010	6/14/2010	6/21/2010	6/28/2010	7/6/2010	7/12/2010	7/16/2010	8/5/2010
MW #2	14.83	15.00	15.02	14.94	14.88	14.64	14.32	13.97	13.54	12.84	12.19	11.21	10.04	9.06	8.68	8.79	8.88	9.76
MW #1	16.50	16.70	16.45	16.35	16.29	16.04	15.70	15.31	14.85	14.08	13.30	12.18	10.95	9.97	9.62	9.66	9.86	10.86
EX GW WELL	0.00	0.00	16.85	16.76	16.69	16.46	16.12	15.72	15.29	14.56	13.85	12.76	11.52	10.58	10.27	10.33	10.52	11.46

APPENDIX III – GEOTECHNICAL REPORT

Billmayer & Hafferman Inc.

GPIA RENTAL CAR FACILITY EXPANSION GEOTECHNICAL REPORT

APRIL 2010

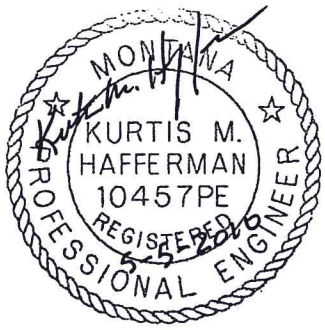


Report prepared for
FCA Rentals LLC

GPIA Rental Car Facility Expansion

BHI File No.: G.57.5

By



Kurt Hafferman, P.E.
May 5, 2010

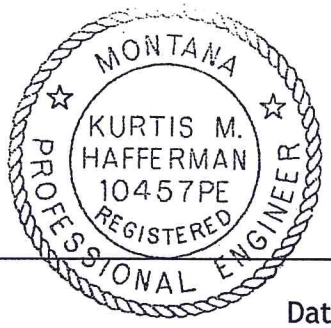
Statement of Qualification of the Professional Engineer

GPIA Rental Car Facility Expansion Geotechnical Report

I declare that to the best of my professional knowledge and belief that I meet the definition and have satisfied the licensing requirements of a Licensed Professional Engineer in the State of Montana as defined in all of the Statutes and Rules applicable to the Board of Professional Engineers and Professional Land Surveyors as described in Title 37, Chapter 1, Part 3 in the Montana Code Annotated Uniform Regulatory Act passed by the Legislature in 1995 including all Administrative Rules pertaining to engineering and land surveying that are written and adopted by the Board of Professional Engineers and Professional Land Surveyors.

I declare that I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property and that I have developed and performed the appropriate inquiries in conformance with the standards and practices.

I declare that I have personally reviewed the data collection, analysis, and report titled GPIA Rental Car Facility Expansion Geotechnical Report completed by professional staff under my direct supervision. This assessment has revealed the conditions discussed in the attached report in connection with the property. I declare that the statements made in this report are true to the best of my belief and professional knowledge.



5-5-2010

Kurtis M. Hafferman, P.E. MT PE 10457 Date

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1
PURPOSE AND SCOPE OF STUDY 1
PROPOSED CONSTRUCTION 2
FIELD EXPLORATIONS 2
LABORATORY TESTING 3
SITE CONDITIONS 3
SUBSURFACE CONDITIONS 4
    FINE GRAVEL WITH SILT AND SAND 4
    GRAVEL WITH FEW FINDS 4
    GROUNDWATER 4
ENGINEERING ANALYSIS AND RECOMMENDATIONS 5
    SITE GRADING 5
    SPREAD FOOTINGS 6
    FLOOR SLABS 7
    PAVEMENTS 7-8
CONTINUING SERVICES 8
LIMITATIONS 9

APPENDIX

A – Vicinity Map, Bore Hole & Test Pit Location Map, Site Plan

B – Field Bore Hole and Test Pit Logs

C – Laboratory Test Results

D – MPWSS Sections 02200 Earthworks – Section 02230 Street Excavation. Backfill & Compaction

E - OSHA Soils Classifications and Trench Slope Requirements

EXECUTIVE SUMMARY

The proposed GPIA Rental Car Facility Expansion, Phase 1 is the first phase of a multi-phase development. Phase 1 consists of the development of approximately 1.25 acres of a 5 acre tract located at Glacier Park International Airport (GPIA) northeast of Kalispell, Montana. The tract is more precisely located in Section 3, Township 29 North, Range 21 West. Phase I will be comprised of the removal of approximately 18 to 24 inches of topsoil and overburden consisting of inorganic silts and fine sands, construction of a paved parking section, and a 2-bay automated car wash facility of approximately 2350 sf. The facility will be owned and operated by all rental car agencies currently operating at GPIA as FCA Rentals, LLC.

The site is currently used for agricultural purposes. The site is generally level with a slight slope to the southeast. Grades in the area are less than 2%. Trumbull Creek is located approximately 2600 feet south and 700 feet west of the site. Due to the high permeability of the native soils runoff from the site does not reach the creek. Trumbull Creek is an intermittent stream in this area and normally does not contain water from July to April of most years. Access to the site is gained via the existing GPIA Fuel Farm Road located southeast of the main terminal off US Hwy 2.

Subsoils at the site consist of 6" to 8" of dark brown top soil followed by an 18 to 24 inch layer of well consolidated lake deposit silts and fine sands. Below this layer is a layer of well graded, semi-rounded to semi-angular cobbles and gravel to 8 inches in diameter in a fine to course sand matrix; the material is loosely consolidated. No water was encountered during the geotechnical investigation.

We recommend supporting structural loads on spread footings placed on the natural soils or engineered gravel fill with a net allowable maximum bearing capacity of 3,000 pounds per square foot. Depending upon final finish floor elevation, the floor can be placed on undisturbed existing soils and/or on a compacted structural fill. A non-woven geotextile separation fabric shall be placed beneath all parking and traveled ways constructed over fine grained materials.

PURPOSE AND SCOPE OF STUDY

This report presents the results of a subsurface investigation for the construction of the GPIA Rental Car Facility Expansion, Phase I Kalispell, Montana. The proposed building location is shown in the Appendix Exhibit A. The investigation was conducted to obtain information concerning subsurface conditions and engineering properties of the subsoils for design and construction of foundations and other site work. It was performed in accordance with our proposal to FCA Rentals, LLC (Robert Varilek) dated September 16th, 2009.

A field exploration program consisting of (3) three borings and (5) five test pits was performed to obtain information on subsurface conditions. Test pits 2 and 3 were dug on the proposed Phase 3 development. Samples obtained during field investigation were

tested in the laboratory to determine the physical and engineering characteristics of the *in situ* soils. Field logs and the results of the laboratory tests are presented in Appendix B & C of this report.

This report summarizes the data obtained during this study and presents our conclusions and recommendations based on the proposed construction and the subsurface conditions encountered. Design parameters and a discussion of geotechnical engineering considerations related to construction are included in the report.

PROPOSED CONSTRUCTION

The Proposed GPIA Rental Car Facility Expansion, calls for new construction of a 2-bay automated carwash building. The new construction consists of a single story building, water supply, wash water re-cycle and clean rise discharge disposal systems and storm water management systems to be constructed on site. A copy of the project site plan is included in Appendix "A" of this report.

Construction is anticipated to be supported by conventional spread footing/perimeter foundation wall with interior columns bearing on footing pads. Foundation elements are to bear directly on undisturbed natural soils or engineered gravel fill.

Preliminary estimates indicate the maximum anticipated column loads to be in the range of 50 kips. The maximum expected foundation wall loads will be approximately 3 kips per lineal foot of wall or less.

FIELD EXPLORATIONS

The field exploration was conducted on March 18th and 22nd, 2010. Three (3) borings and (5) five test pits were developed at the locations shown on the Bore Hole and Test Pit Location Map contained in Appendix "A". Locations of the exploration borings were determined by survey measurements from existing site boundaries according to proposed site usage.

The borings were advanced through the overburden soils by means of a truck mounted drill rig equipped with an 8 inch hollow stem auger while test pits were dug utilizing a cat 320c excavator. The drilling, logging and sample collection was performed by Billmayer & Hafferman, Inc. staff.

The sandy gravel non-cohesive soils encountered could not be collected using a split spoon sampler due to their relative consolidation and size of the material encountered. This required samples to be collected from the drill cuttings. Additional undisturbed samples were collected during excavation of the test pits by extraction of undisturbed materials from the test pit walls.

LABORATORY TESTING

Samples obtained during the field exploration were taken to the Billmayer & Hafferman, Inc. laboratory, where they were observed and visually classified according to the Unified Soil Classification System (USCS). Representative samples were selected for testing to determine the engineering and physical properties.

Tests Conducted:	To Determine:
Grain-size Distribution	Size and distribution of soil particles; that is, sand and gravel with a small amount of silt.
Moisture-Density Relationships	(Not possible with site soils)
In Situ Moisture	The in-place moisture was determined by means of weighing samples containing in-situ moisture and weighing again after they had been dried in an oven.

The soils encountered in the footing elevations were primarily well graded cobbles and gravels and gap graded sands.

Results of all field and laboratory tests are summarized on the enclosed logs, figures and tables in the Appendix Exhibits B & C. This data, along with the field information, were used to prepare the exploration boring logs as well as this report.

SITE CONDITIONS

The proposed GPIA Rental Car Facility Expansion will be located southwest of the GPIA main terminal building off the existing fuel farm road. The facility expansion proposes building a 2-bay automated carwash and off-street parking for overflow rental vehicles. Currently the site is vacant and seasonally tilled for agricultural purposes.

The proposed site is located within Seismic Zone 3 as designated by the 1994 Uniform Building Code (UBC). The appropriate UBC seismic design parameters for this site include a seismic factor (Z) of 0.30, soil profile S_1 and site factor of 1.0.

The 2000 International Building Code (IBCO) indicates that Kalispell, Montana, is in Seismic Zone 3, which can be characterized as having a moderate to strong potential for strong ground motion in response to earthquakes. The IBCO seismic design parameters for this site include a seismic zone soil profile type of (E), in accordance with Table 1615.1.1 Site Class Definitions from the above referenced standard. According to the National Hazard Earthquake Reduction Program's (NEHRP 1991) recommendations for development of seismic regulations for new buildings, design parameters for this site include an effective peak acceleration (A_a) of 0.18g and effective peak velocity-related

acceleration (A_v) of 0.18g with a 90 percent probability of the ground motion not being exceeded in a 50-year period.

SUBSURFACE CONDITIONS

The subsurface profile encountered in the borings beneath a 0.5 to 1.0 foot thick layer of topsoil generally consists of 12" to 24" of well consolidated lake bed silt with fine sand deposits followed by loose to moderately consolidated, semi-rounded, well drained cobbles to 8" in diameter and well graded gravels in a fine to medium sand matrix. These finding were consistent throughout the site with no water encountered during the geotechnical investigation.

The boring logs should be referenced for complete descriptions of the soil types and their estimated depths. A characterization of the subsurface profile normally includes grouping soils with similar physical and engineering properties into a number of distinct layers. The representative subsurface layers at the site are presented below starting at the ground surface.

SILT WITH FINE SAND
Lake bed deposits of silt and fine sands were encountered directly below the topsoil and averaged from 12" to 24" in thickness. 100% of this material will pass a #40 sieve as determined by visual analysis. The material was non-plastic. The in-place density is approximately 90 to 110lbs/ft^3, and the in-place moisture as determined by laboratory analysis ranged from 14.55 to 18.5%, as determined in the laboratory. This soil should not be considered suitable as a subgrade for supporting pavement due to its high frost susceptibility.

COBBLES AND GRAVES WITH SOME SAND AND TRACE SILT
Cobbles to 8" in diameter and Gravels with some fine to course sand and trace fines were encountered at various depths greater than 2 feet to the bottom of the bore holes at 15 feet. This was confirmed in the test pits also. The material was semi-rounded to semi-angular and dry to slightly moist to the maximum bore depth of 15 feet. This material contains approximately >65% gravel (> No. 4 sieve) and 35% sand and silt as determined by the gradation analysis. The silt fraction was less than 2% by weight. The material is moderately consolidated and should be considered suitable for all aspects of construction.

GROUNDWATER
No ground water was encountered during the geotechnical investigation. However, it is likely seasonal high groundwater is present in the area as staining and mineral deposits were noted in a layer of gravel 4 feet below the existing ground surface.

ENGINEERING ANALYSIS AND RECOMMENDATIONS

SITE GRADING

The design and construction criteria presented below should be observed for site preparation purposes. The construction details should be considered when preparing the project documents.

1. All topsoil and fill material should be removed from the proposed building and pavement areas, along with all subsurface improvements in the building area.

2. All fill and backfill should be approved by the geotechnical engineer, placed in uniform lifts suitable for the compaction equipment selected, moisture conditioned to within two percent of optimum for the site soils. All back-fill should be compacted to the following minimum dry densities as determined by ASTM D698. Imported gravel used for any of the site grading, depending on its gradation, might necessitate using the relative density as determined by ASTM D4253 and D4254 for compaction control. In that event, the percent relative density for items a) and d) below becomes 75 and 65 percent, respectively.

    a) Structural fill under building pad 98%
    b) Foundation backfill 95%
    c) Overlot fill 90%
    d) Below paved areas 95%

3. The sandy gravel with trace silt is suitable for general site grading, structural fill beneath the building pad and pavement areas, and backfill around foundations, provided they are placed in accordance with Recommendation 2 above.

4. Imported gravel used for engineered fill beneath footings and as structural fill below the building pad should be approved by the geotechnical engineer. For selection guidelines, imported gravel should conform to the following grading requirements:

Sieve or Screen Size	Percent Passing by Weight
3-inch	100%
No. 4	25% – 65%
No. 200	0% – 15%

In the event that imported material is used for structural fill, the geotechnical engineer shall produce another moisture-density curve (proctor curve) for the material to ensure proper compaction during the construction process.

5. It is the responsibility of the contractor to provide safe working conditions in connection with underground excavations. Temporary construction excavations

which workers will enter will be governed by OSHA guideline 1926.6542, Appendix B to subpart P. For planning purposes, subsoils encountered in the exploration borings classify as Type C.

6. Develop and maintain site grades which will rapidly drain surface and roof run-off away from foundation and subgrade soils-both during and after construction.

SPREAD FOOTINGS

The geotechnical investigation revealed that the native sandy gravels are suitable for use as a bearing material. Compaction of the material should be accomplished in accordance with Site Grading, 2, a.

Based on our information regarding the structural loads, footings supported on the natural sandy gravel, (GW, GP), material can be proportioned for a net allowable bearing pressure of 3,000 pounds per square foot in accordance with Table 1804.2 of the International Building Code 2003.

The design and construction criteria presented below should be observed for a spread footing foundation system. The construction details should be considered when preparing the project documents.

1. Support structural loads on spread footings placed on the natural gravel or engineered gravel fill. Footings should be designed for a net allowable bearing pressure of 3,000 psf.

2. Exterior footings should be placed at least 42 inches below grade for frost protection.

3. Footing lateral loads may be resisted by friction between the footing base and supporting soil, and lateral bearing pressure against sides of footings. For design purposes, a friction coefficient of 0.30 and a lateral bearing pressure of 150 pounds per square foot per foot of depth is appropriate. These values include a factor of safety of about 1.5.

4. Spread footings should have a minimum width of 16 inches for continuous footings or as required to reduce the bearing pressure to 3,000 psf. or applicable building codes, whichever is more restrictive.

5. A representative of the geotechnical engineer should observe all footing excavations prior to placement of concrete forms.

6. Foundation walls adjacent to habitable space below grade shall be waterproofed in accord with the requirements of IBC.

FLOOR SLABS

Performance of floor slabs is dependent on having a relatively uniform subgrade beneath the slab. Site grading performed to level the building pad suggests minor amounts of structural fill may be placed beneath portions of the building to depths in the range of about 1 to 2 feet. In order to mitigate potential underslab settlement, overexcavation and recompaction of a zone of soil extending 12 inches below subgrade elevation following the removal of the topsoil and silty material is recommended. Exclusive of topsoil and fill material, the zone of compacted on-site soils and/or structural fill placed during preparation of the building pad, is suitable to support moderately loaded slab-on-grade construction.

The Design and construction criteria presented below should be observed for a slab-on-grade floor. The construction details should be considered when preparing the project documents.

1. A minimum 4 inch layer of free-draining gravel should be placed beneath the slabs. This material should consist of minus 3/4 inch aggregate with less than 10 percent passing the No. 4 sieve. Concrete flatwork supported on the gravel should be designed using a modulus of subgrade reaction of 150 pounds per square inch (psi) per inch.

2. A vapor barrier should be placed beneath floor slabs as required by IBC. Vapor barrier shall be a minimum of 6 mil polyethylene sheeting overlapped and sealed at joints. Vapor barriers are sometimes placed immediately beneath the slabs or below the leveling course. There are advantages and disadvantages to each location. The designer should carefully consider the construction timeline and other construction implications to ascertain the more desirable location.

3. The floor slab must be separated from all bearing walls and columns with expansion joints which will allow unrestrained vertical movement.

4. All plumbing lines should be tested before operation. Where plumbing lines enter through the floor, a positive bond break should be provided. Flexible connections should be provided for slab-bearing mechanical equipment.

PAVEMENTS

There will be one pavement structure contained within this project. This pavement structure is expected to receive light vehicle traffic only.

The design and construction criteria presented below should be observed for the pavements. The construction details should be considered when preparing the project documents.

1. Prepare the subgrade by subexcavating at least 1.5 feet below the finished subgrade elevation and compacting the material in accordance with item 2, d.

2. The minimum gravel thickness should be as follows:

	Thickness (inches)
Asphalt Concrete Surfacing	3
¾" crushed aggregate base course	3
Compacted native materials	18

The Montana Public Works guideline specifications have been included in Appendix "E"

CONTINUING SERVICES

Two additional elements of geotechnical engineering service are important to the successful completion of this project.

1. **Consultation with Billmayer & Hafferman, Inc. during the design phase.** This is essential to ensure that the intent of our recommendations is incorporated in design decisions related to the project and that changes in the design concept consider geotechnical aspects.

2. **Observation and monitoring during construction.** Billmayer & Hafferman, Inc. should be retained to observe the earthwork phases of the project, including the site grading and foundation excavations, to determine that the subsurface conditions are compatible with those used in our analysis and design. During site grading, placement of fill should be observed and tested to confirm that the required density has been achieved. In addition, if environmental contaminants or other concerns are discovered in the subsurface, Billmayer & Hafferman, Inc. professionals are available for consultation.

LIMITATIONS

This report has been prepared in accordance with generally accepted soil and foundation engineering practices in this area for use by the client for design purposes. The conclusions and recommendations submitted in this report are based upon the data obtained from the exploration borings drilled at the locations indicated on the Bore Hole and Test Pit Location Map, and the proposed site grading and construction discussed in this report. The nature and extent of subsurface variations across the site may not become evident until construction. If during construction, soil, fill or water conditions appear to be different from those described herein, this office should be advised at once so re-evaluation of the recommendations can be made.

Appendix "B"

1. Field Bore Hole & Test Pit Logs

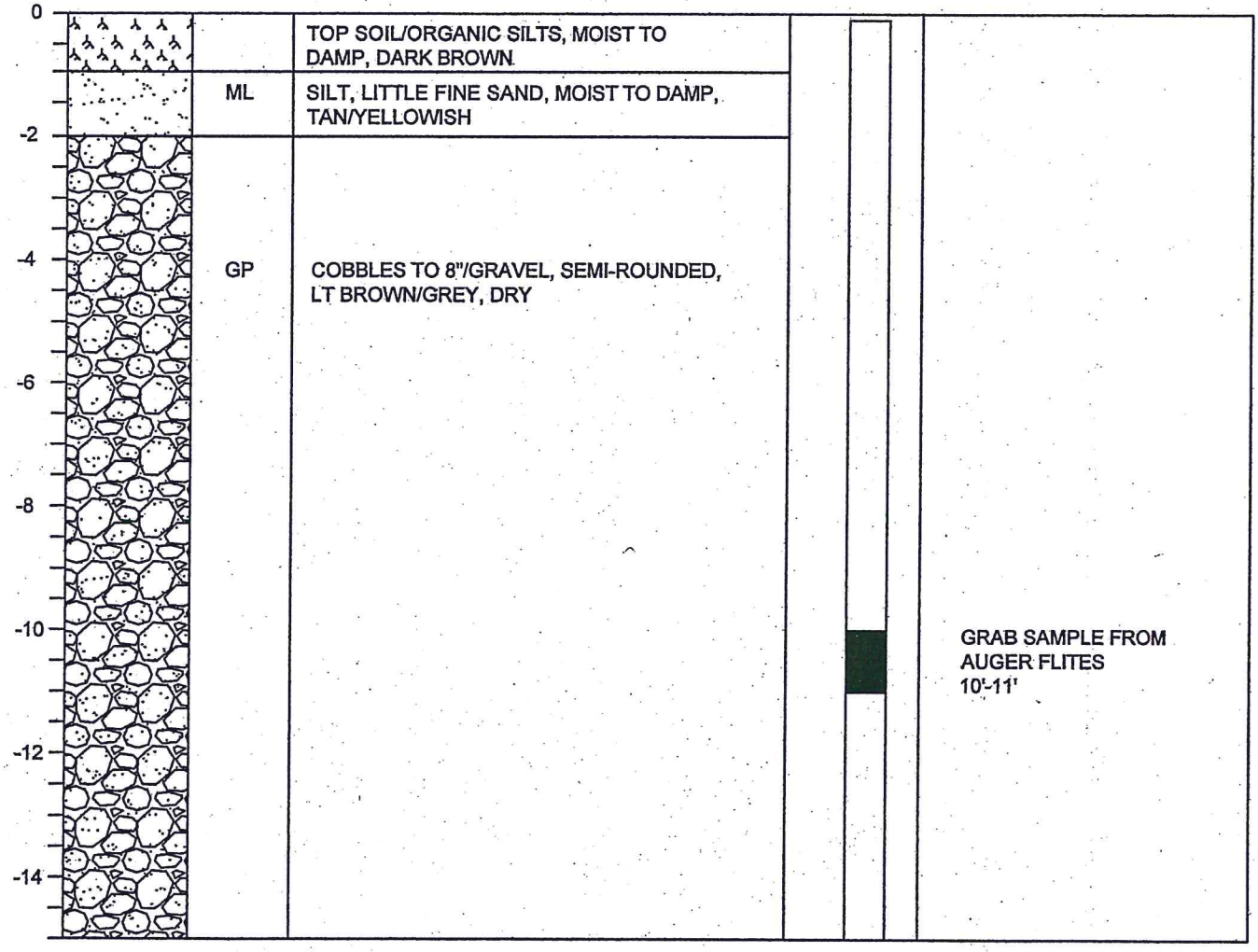
BILLMAYER & HAFFERMAN, INC.
2191 Third Avenue East
Kalispell, Montana 59901
(406) 257-8708 Fax 257-8710

FIELD BOREHOLE LOG

BOREHOLE NO.: BH 1
JOB NO.: G.57.5

PROJECT:	**GPIA CARWASH FACILITY**	TOTAL DEPTH:	**15' FEET**
SITE LOCATION:	**KALISPELL, MONTANA**	METHOD OF DRILLING:	**8" HOLLOW STEM AUGER**
BORE LOCATION:	**CENTER OF LOT**	SAMPLING METHODS:	**GRAB SAMPLE**
LOGGED BY:	**NJF**		
DATES DRILLED:	**3/22/10**		

DEPTH	SOIL SYMBOLS	USCS DESC	SOIL DESCRIPTION	SAMPLE	DESCRIPTION
0			TOP SOIL/ORGANIC SILTS, MOIST TO DAMP, DARK BROWN		
-2		ML	SILT, LITTLE FINE SAND, MOIST TO DAMP, TAN/YELLOWISH		
-4		GP	COBBLES TO 8"/GRAVEL, SEMI-ROUNDED, LT BROWN/GREY, DRY		
-6					
-8					
-10					GRAB SAMPLE FROM AUGER FLITES 10'-11'
-12					
-14					



BOH 15'

NO WATER ENCOUNTERED DURING DRILLING

BILLMAYER & HAFFERMAN, INC.
2191 Third Avenue East
Kalispell, Montana 59901
(406) 257-8708 Fax 257-8710

FIELD BOREHOLE LOG

BOREHOLE NO.: BH 2
JOB NO.: G.57.5

PROJECT:	**GPIA CARWASH FACILITY**	TOTAL DEPTH:	**15' FEET**
SITE LOCATION:	**KALISPELL, MONTANA**	METHOD OF DRILLING:	**8" HOLLOW STEM AUGER**
BORE LOCATION:	**CENTER OF LOT**	SAMPLING METHODS:	**GRAB SAMPLE**
LOGGED BY:	**NJF**		
DATES DRILLED:	**3/22/10**		

DEPTH	SOIL SYMBOLS	USCS DESC	SOIL DESCRIPTION	SAMPLE	DESCRIPTION
0			TOP SOIL/ORGANIC SILTS, MOIST TO DAMP, DARK BROWN		
		ML	SILT, LITTLE SAND, MOIST TO DAMP, DARK TAN		
-2					
-4		GP	COBBLES TO 8", GRAVEL, SEMI-ROUNDED, DRY, LT BROWN/GREY		
-6					
-8					
-10					GRAB SAMPLE FROM AUGER FLITES 10'-11'
-12					
-14					

BOH 15'

NO WATER ENCOUNTERED DURING DRILLING

BILLMAYER & HAFFERMAN, INC.
2191 Third Avenue East
Kalispell, Montana 59901
(406) 257-8708 Fax 257-8710

FIELD BOREHOLE LOG

BOREHOLE NO.: BH 3
JOB NO.: G.57.5

PROJECT:	**GPIA CARWASH FACILITY**	TOTAL DEPTH:	**15' FEET**
SITE LOCATION:	**KALISPELL, MONTANA**	METHOD OF DRILLING:	**8" HOLLOW STEM AUGER**
BORE LOCATION:	**NE CORNER OF LOT**	SAMPLING METHODS:	**GRAB SAMPLE**
LOGGED BY:	**NJF**		
DATES DRILLED:	**3/22/10**		

DEPTH	SOIL SYMBOLS	USCS DESC	SOIL DESCRIPTION	SAMPLE	DESCRIPTION
0			TOP SOIL/ORGANIC SILTS DRY TO MOIST, DARK BROWN		
-2		ML	SILT/LITTLE SAND MOIST, LIGHT TAN		
-4					
-6					
-8		GP	COBBLES AND GRAVEL/SEMI-ROUNDED, LITTLE TO SOME FINE TO COARSE SAND, DRY, LIGHT BROWN/GREY		
-10					GRAB SAMPLE FROM AUGER FLITES 10'-11'
-12					
-14					

BOH 15'

NO WATER ENCOUNTERED DURING DRILLING

BILLMAYER & HAFFERMAN, INC.
2191 Third Avenue East
Kalispell, Montana 59901
(406) 257-8708 Fax 257-8710

FIELD BOREHOLE LOG

BOREHOLE NO.: TP 1
JOB NO.: G.57.5

PROJECT:	**GPIA CARWASH FACILITY**	TOTAL DEPTH:	**8' FEET**
SITE LOCATION:	**KALISPELL, MONTANA**	METHOD OF DRILLING:	**CAT 320C EXCAVATOR**
BORE LOCATION:	**NE CORNER OF LOT**	SAMPLING METHODS:	**UNDISTURBED SAMPLE FROM PIT WALL**
LOGGED BY:	**NJF**		
DATES DRILLED:	**3/22/10**		

DEPTH	SOIL SYMBOLS	USCS DESC	SOIL DESCRIPTION	SAMPLE	DESCRIPTION
0			TOP SOIL/ORGANIC SILTS DRY TO MOIST, DARK BROWN		
-2		ML	SILT/LITTLE SAND MOIST, LIGHT TAN		
-4		GP	COBBLES AND GRAVEL/SEMI-ROUNDED, LITTLE TO SOME FINE TO COARSE SAND, DRY, LIGHT BROWN/GREY		UNDISTURBED SAMPLE 5'-6'
-6					
-8					

BOH 8'

NO WATER ENCOUNTERED DURING DRILLING

BILLMAYER & HAFFERMAN, INC.
2191 Third Avenue East
Kalispell, Montana 59901
(406) 257-8708 Fax 257-8710

FIELD BOREHOLE LOG

BOREHOLE NO.: TP 2
JOB NO.: G.57.5

PROJECT:	**GPIA CARWASH FACILITY**	TOTAL DEPTH:	**8' FEET**
SITE LOCATION:	**KALISPELL, MONTANA**	METHOD OF DRILLING:	**CAT 320C EXCAVATOR**
BORE LOCATION:	**EAST EDGE OF LOT**	SAMPLING METHODS:	**UNDISTURBED SAMPLE FROM PIT WALL**
LOGGED BY:	**NJF**		
DATES DRILLED:	**3/22/10**		

DEPTH	SOIL SYMBOLS	USCS DESC	SOIL DESCRIPTION	SAMPLE	DESCRIPTION
0			TOP SOIL/ORGANIC, MOIST, DARK BROWN		
		GM	GRAVEL W/ SILT, LITTLE TO SOME SAND, MOIST, DARK TAN TO REDDISH BROWN		
-2					
-4		GW	COBBLES TO 8" W/ GRAVEL, SEMI-ROUNDED, DRY, W/ TO SOME SAND, TRACE SILT, F/C SAND, LT BROWN/GREY		UNDISTURBED SAMPLE 5'-6'
-6					
-8					

BOH 8'

NO WATER ENCOUNTERED DURING DRILLING

BILLMAYER & HAFFERMAN, INC.
2191 Third Avenue East
Kalispell, Montana 59901
(406) 257-8708 Fax 257-8710

FIELD BOREHOLE LOG

BOREHOLE NO.: TP 3
JOB NO.: G.57.5

PROJECT:	**GPIA CARWASH FACILITY**	TOTAL DEPTH:	**8' FEET**
SITE LOCATION:	**KALISPELL, MONTANA**	METHOD OF DRILLING:	**CAT 320C EXCAVATOR**
BORE LOCATION:	**SW PORTION OF LOT**	SAMPLING METHODS:	**UNDISTURBED SAMPLE FROM PIT WALL**
LOGGED BY:	**NJF**		
DATES DRILLED:	**3/22/10**		

DEPTH	SOIL SYMBOLS	USCS DESC	SOIL DESCRIPTION	SAMPLE	DESCRIPTION
0			TOP SOIL/ORGANIC SILTS MOIST, DARK BROWN		
		GM	GRAVEL W/ SILT, LITTLE TO SOME SAND, MOIST TO DAMP, REDDISH BROWN		
-2					
-4		GW	COBBLE TO 8", GRAVEL, LITTLE TO SOME SAND, DRY, LT BROWN/GREY		UNDISTURBED SAMPLE 5'-6'
-6					
-8					

BOH 8'

NO WATER ENCOUNTERED DURING DRILLING

BILLMAYER & HAFFERMAN, INC.
2191 Third Avenue East
Kalispell, Montana 59901
(406) 257-8708 Fax 257-8710

FIELD BOREHOLE LOG

BOREHOLE NO.: TP 4
JOB NO.: G.57.5

PROJECT:	**GPIA CARWASH FACILITY**	TOTAL DEPTH:	**8' FEET**
SITE LOCATION:	**KALISPELL, MONTANA**	METHOD OF DRILLING:	**CAT 320C EXCAVATOR**
BORE LOCATION:	**CENTER OF LOT**	SAMPLING METHODS:	**UNDISTURBED SAMPLE FROM PIT WALL**
LOGGED BY:	**NJF**		
DATES DRILLED:	**3/22/10**		

DEPTH	SOIL SYMBOLS	USCS DESC	SOIL DESCRIPTION	SAMPLE	DESCRIPTION
0			TOP SOIL/ORGANIC SILTS, MOIST TO DAMP, DARK BROWN		
		ML	SILT, LITTLE SAND, MOIST TO DAMP, DARK TAN		
-2					
-4		GP	COBBLES TO 8", GRAVEL, SEMI-ROUNDED, DRY, LT BROWN/GREY		UNDISTURBED SAMPLE 5'-6'
-6					
-8					

BOH 8'

NO WATER ENCOUNTERED DURING DRILLING

BILLMAYER & HAFFERMAN, INC.
2191 Third Avenue East
Kalispell, Montana 59901
(406) 257-8708 Fax 257-8710

FIELD BOREHOLE LOG

BOREHOLE NO.: TP 5
JOB NO.: G.57.5

PROJECT:	**GPIA CARWASH FACILITY**	TOTAL DEPTH:	**8' FEET**
SITE LOCATION:	**KALISPELL, MONTANA**	METHOD OF DRILLING:	**CAT 320C EXCAVATOR**
BORE LOCATION:	**NW CORNER OF LOT**	SAMPLING METHODS:	**UNDISTURBED SAMPLE FROM PIT WALL**
LOGGED BY:	**NJF**		
DATES DRILLED:	**3/22/10**		

DEPTH	SOIL SYMBOLS	USCS DESC	SOIL DESCRIPTION	SAMPLE	DESCRIPTION
0			TOP SOIL/ORGANIC SILTS, MOIST TO DAMP, DARK BROWN		
-2		ML	SILT, LITTLE FINE SAND, MOIST TO DAMP, TAN/YELLOWISH		
-4		GP	COBBLES TO 8"/GRAVEL, SEMI-ROUNDED, LT BROWN/GREY, DRY		UNDISTURBED SAMPLE 5'-6'
-6					
-8					

BOH 8'

NO WATER ENCOUNTERED DURING DRILLING

APPENDIX IV - RATIONALE FOR PROPOSED DISCHARGE LIMITATIONS AND CONDITIONS

Effluent limitations were established within the 2011 permit. The following is the rationale in updating and reestablishing these current limitations.

A. Water Use Classification & Applicable Water Quality Standards

The receiving water is Class I ground water and high quality waters of the state (75-5-103, MCA). The quality of Class I ground water must be maintained so that these waters are suitable for the following beneficial uses with little or no treatment (ARM 17.30.1006):

- Public and private water supplies;
- Culinary and food processing purposes;
- Irrigation;
- Drinking water for livestock and wildlife; and,
- Commercial and industrial purposes.

Persons may not cause a violation of the following specific water quality standards in Class I ground water, pursuant to ARM 17.30.1006, except within a DEQ approved mixing zone as provided in ARM 17.30.1005:

- The human health standards for ground water listed in Circular DEQ-7;
- For concentrations of parameters for which human health standards are not listed in DEQ-7, no increase of a parameter to a level that renders the waters harmful, detrimental, or injurious to the beneficial uses listed for Class I water. DEQ may use any pertinent credible information to determine these levels; and,
- No increase of a parameter that causes a violation of the nondegradation provisions of 75-5-303, MCA.

The nondegradation rules (ARM 17.30.701, et seq.) implement Montana's nondegradation policy, which applies to any activity of man resulting in a new or increased source which may cause degradation of state waters (ARM 17.30.705). In accordance with ARM 17.30.706, DEQ is required to determine whether a new or increased source may cause degradation or whether it is nonsignificant according to ARM 17.30.715.

DEQ performed a significance determination for the proposed activity as part of the 2011 permit development (DEQ, 2011). The determination established that the proposed discharge is a new or increased source (ARM 17.30.702) because it is an activity resulting in a change of existing water quality occurring on or after April 29, 1993. The proposed activity will result in discharges that if maintained in compliance with the nondegradation-nonsignificance criteria established within this permit, will not constitute a significant activity.

The applicable ground water standards pursuant to ARM 17.30.1006 and the nondegradation-nonsignificance criteria at ARM 17.30.715 for the identified parameters are summarized in the table below. For the parameter lead, the 2011 permit incorrectly identified the ground water human health standard (0.015 mg/L) as the numeric criteria to be used in development of the respective effluent limitation. The permit however did not correctly identify the nonsignificance criteria (0.0023 mg/L) for this parameter. DEQ recognizes the nonsignificance criteria as the most restrictive standard, which will therefore be used to update the effluent limitation accordingly.

DEQ will maintain limitations for total dissolved solids (TDS) parameter to maintain beneficial uses. TDS is a measurement of all dissolved ions and is a general indicator of the overall quality of ground water.

Applicable Ground Water Quality Standards.

Parameter[1]	Units	17.30.1006(1)(b)(i) Human Health Standards - Ground Water	17.30.1006(1)(b)(ii) Beneficial Uses - Ground Water	Pollutant Category[2]	17.30.715 Nondegradation - Nonsignificance Criteria[3][4]
Total Dissolved Solids (TDS)	mg/L	-	500	-	-
Lead (Pb), Dissolved	µg/L	0.015	-	T	0.0023

Footnotes:

Dissolved: Metal parameters will be analyzed using the dissolved portion (0.45 micron filter), ARM 17.30.1006.

These standards establish the maximum allowable changes in ground water quality and are the basis for limiting discharges to ground water, ARM 17.30.1005(1); Circular DEQ-7 (2012), Footnote 16; and ARM 17.30.715(1).

(1) Parameters of concern (DEQ, 2011).

(2) Circular DEQ-7 (2012): Carcinogen (C), Harmful (H), and Toxic (T) parameter. Toxic pollutant with a Bioconcentrator (B) factor.

(3) Discharges in compliance with the nondegradation significance criteria constitute nonsignificant degradation.

(4) Toxic parameters, the change is not significant if the resulting concentration outside of a mixing zone designated by DEQ does not exceed 15% of the lowest applicable standard per ARM 17.30.715(1)(c). Carcinogen parameters or parameters with a bioconcentration factor (>300); change is not significant if concentrations are less than or equal to the concentrations of those parameters in the receiving water per ARM 17.30.715(1)(b).

B. Development of Effluent Limits

ARM 17.30.1006 and 17.30.715 set forth the basis for developing effluent limitations that will protect water quality. The ground water quality standards establish the maximum allowable changes to ground water quality; are the basis for limiting discharges to ground water; and may only be exceeded within a mixing zone authorized by DEQ.

1) Water Quality Based Effluent Limitations

To protect beneficial uses, there shall be no increase of a parameter to a level that renders the waters harmful, detrimental, or injurious to the beneficial uses. Therefore, no wastes may be discharged such that the waste either alone or in combination with other wastes will violate or can reasonably be expected to violate any standard.

The allowable discharge concentrations will be derived from a mass-balance equation (ARM 17.30.517) which is a simple steady-state model, used to determine the parameter concentration after accounting for other sources of pollution in the receiving water and any dilution as provided by a mixing zone. The equation factors in cumulative impacts of existing upgradient discharges and will limit the discharger to the assimilative capacity currently available in the receiving aquifer. The facility is adjacent to the runway area of the airport, therefore there are no downgradient sources in the vicinity of the facility. The mass-balance equation (Equation 1) derived for ground water is as follows:

Equation 1:

$$Q_{gw}C_{gw} + Q_{eff}C_{eff} = Q_{comb}C_{proj}$$

Where:

Q_{gw}	=	ground water available for mixing
C_{gw}	=	ambient receiving ground water concentration
Q_{eff}	=	maximum design capacity of wastewater system
C_{eff}	=	effluent pollutant concentration
Q_{comb}	=	combined ground water and effluent ($Q_{comb} = Q_{gw} + Q_{eff}$)
C_{proj}	=	projected pollutant concentration (after available mixing)

The mass-balance equation has been arranged to calculate effluent limits so that the discharge does not cause or contribute to an exceedance of the most restrictive water quality standard. This equation can be applied to any effluent and receiving water where the applicable dilution ratio is known. This equation will be used for both TDS and lead which have been authorized mixing (Section III).

Equation 2:

$$C_{lmt} = C_{std} + D(C_{std} - C_{gw})$$

Where:
C_{lmt} = effluent limitation concentration
C_{std} = water quality standard concentration
C_{gw} = ambient receiving ground water concentration
D = dilution ratio (Q_{gw} / Q_{eff})

In solving the above equation, the proposed limit for TDS has increased from 5,748 mg/L to 10,026 mg/L. This limit increase was due to a decrease in ambient ground water quality concentrations resulting in a greater assimilative capacity. The proposed limit for lead has increased from 0.015 mg/L to 0.081 mg/L. Although a more restrictive water quality standard was used, the limit ultimately increased due to allowable dilution within the mixing zone.

C. Final Effluent Limitations

Based on the information and analyses presented in Sections III and IV and pursuant to 75-5-402, MCA and ARM 17.30.1031, DEQ proposes to reestablish numerical effluent limitations. The proposed final limitations are the most stringent applicable limitations for each individual parameter as developed above. Effluent limits based on water quality standards are expressed as a daily maximum concentration. The proposed final effluent limits are listed in Section IV.

APPENDIX V – PHOSPHORUS BREAKTHROUGH ANALYSIS

DEQ performed a phosphorus breakthrough analysis for the 2011 permit. The analysis estimated a breakthrough time of 406 years which is considered nonsignificant pursuant to Montana's Nondegradation criteria [ARM 17.30.715(1)(e)].

APPENDIX VI – RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

ARM 17.30.1031 requires that all issued MGWPCS permits contain monitoring requirements that assure compliance with the developed numeric effluent limitations and the water quality standards. Effluent monitoring requirements were established within the 2011 permit and will be maintained.

A. Effluent Monitoring - Compliance

Final numeric effluent limitations are maintained in this permit with specific magnitudes and durations based on site-specific conditions that ensure the discharge will not cause or contribute to an exceedance of an applicable water quality standard (Appendix IV). Accordingly, the permittee will be required to monitor and report monitoring results at a specified frequency in order to demonstrate compliance with the applicable effluent limitations. Effluent monitoring and reporting requirements are summarized in the table below. All analytical methods must be in accordance with the Code of Federal Regulations, 40 CFR Part 136 for each monitored parameter.

B. Effluent Monitoring - Sampling Location

Samples shall be representative of the nature of the monitored discharge (Permit Part II.A.). The effluent sample location (EFF-001) is described within Table 1 of Section II. Effluent monitoring and reporting requirements are summarized in the table below.

C. Discharge Monitoring

Flow measurements shall be representative of the volume of the monitored discharge (Permit Part II.A.). The applicant will be required to maintain and report flow measurements using a flow-measuring device capable of measurements that are within 10 percent of the actual flow (Permit Part II.B.). The flow measuring device (FM-001) is described within Table 1 of Section II. Flow monitoring and reporting requirements are summarized in the table below.

Effluent Monitoring and Reporting Requirements – Outfall 001

Analyte/ Measurement	Monitor Location	Units	Sample Type[1]	Minimum Sample Frequency	Reporting Requirements[1][2]	Report Freq	Rationale
Flow Rate, Effluent[3]	FM-001	gpd	Contin-uous	Contin-uous	Daily Maximum Quarterly Average	Quarterly	Effluent Characterization
Chloride (as Cl)	EFF-001	mg/L	Grab	1/Month	Daily Maximum Quarterly Average	Quarterly	Effluent Characterization
pH	EFF-001	s.u.	Grab	1/Month	Quarterly Average	Quarterly	Effluent Characterization
Sulfate	EFF-001	mg/L	Grab	1/Month	Daily Maximum Quarterly Average	Quarterly	Effluent Characterization
Total Dissolved Solids (TDS)	EFF-001	mg/L	Grab	1/Month	Daily Maximum Quarterly Average	Quarterly	Permit Compliance
Total Petroleum Hydrocarbons (TPH)	EFF-001	mg/L	Grab	1/Month	Daily Maximum Quarterly Average	Quarterly	Effluent Characterization
Arsenic, Dissolved	EFF-001	µg/L	Grab	1/Month	Daily Maximum Quarterly Average	Quarterly	Effluent Characterization
Copper, Dissolved	EFF-001	µg/L	Grab	1/Month	Daily Maximum Quarterly Average	Quarterly	Effluent Characterization
Lead, Dissolved	EFF-001	µg/L	Grab	1/Month	Daily Maximum Quarterly Average	Quarterly	Permit Compliance
Zinc, Dissolved	EFF-001	µg/L	Grab	1/Month	Daily Maximum Quarterly Average	Quarterly	Effluent Characterization

Footnotes:

EFF-001: location provided in the System Summary Table.

FM-001: location provided in the System Summary Table.

Dissolved: Metal parameters will be analyzed using the dissolved portion (0.45 micron filter), ARM 17.30.1006(6).

If no discharge occurs during the reporting period, "no discharge" shall be recorded on the effluent Discharge Monitoring Report (DMR) report forms.

Grab sample will represent concentration for a 24 hour period.

Parameter analytical methods shall be in accordance with the Code of Federal Regulations, 40 CFR Part 136, unless specified above.

(1) See definitions in Part V of the permit.

(2) Daily Maximum: Report highest measured daily value for the reporting period on Discharge Monitoring Report (DMR) form.

(3) Requires recording device or totalizing meter.

APPENDIX VII - REFERENCES CITED

40 CFR § 136 – Guidelines Establishing Test Procedures for the Analysis of Pollutants. 2011.

Administrative Rules of Montana, Title 17, Chapter 30, Water Quality:

- Subchapter 2 - Water Quality Permit Fees.
- Subchapter 5 – Mixing Zones in Surface and Ground Water.
- Subchapter 7 – Nondegradation of Water Quality.
- Subchapter 10 – Montana Ground Water Pollution Control System.
- Subchapter 13 – Montana Pollutant Discharge Elimination System.

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Department of Environmental Quality, Water Quality Circulars:

- Circular DEQ-2 – Design Standards for Wastewater Facilities.
- Circular DEQ-4 – Montana Standards for On-Site Subsurface Sewage Treatment Systems.
- Circular DEQ-7 – Montana Numeric Water Quality Standards, Required Reporting Values, and Trigger Values.

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U.S. Environmental Protection Agency, NPDES Permit Writers' Manual, 833-K-10-001, September 2010.

U.S. Environmental Protection Agency, *Onsite Wastewater Treatment Systems Manual*, 625/R-00/008, Office of Research and Development and Office of Water. 2002b.

U.S. Environmental Protection Agency, 1991. *Technical Support Document for Water Quality-Based Toxics Control* (TSD). EPA-505/2-90-001. U.S. Environmental Protection Agency, Office of Water, Washington, DC. <www.epa.gov/npdes/pubs/owm0264.pdf

U.S. Geological Survey, Basic Ground Water Hydrology, http://pubs.usgs.gov/wsp/2220/report.pdf, 2016.

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Prepared By: Chris Boe, February 2018.