March 7, 2002
FSC Project Number: 2001-7140 sent by fax: (867) 360-6369

Dionne Filiatraut
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
X0E 1J0

Re: Application for Modification - Supporting Documentation

Water Licence N5L4-1447

Dear Dionne,

On behalf of our client, this application for a modification to Water Licence N5L4-1447 is made under Part D: Conditions Applying to Modifications.

This application is to address the construction of a new sewage treatment plant (STP) in Pangnirtung, NU.

FSC was contracted to design the building that houses the new system as well as the outfall. Drawings of the building are included that show the location of the STP. The outfall design has not been completed at present, but it is known the effluent will be discharged onto the beach above the high tide line.

BCA is responsible for the design of the sewage treatment system itself. A description of this is also included as well as a process flow diagram. The effluent characteristics can also be found within this document.

Please contact me if you need any further information.

Yours truly,
Ferguson Simek Clark

Ron Kent, P.Eng.
Head, Environmnet Department

May 15
May 18

3300 7140

The Clearwater Group™

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FAX

DATE:	31 January 2002	**TIME:**	
FROM:	**Gerald Stang** BCA Industrial	**PHONE:** **FAX:**	**(604) 539-9399** **(604) 539-9309**
COPIES:			
TO:	**Ron Kent** Ferguson Simek Clark	**PHONE:** **FAX:**	**(867) 920-2882** **(867) 920-4319**

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Mr. Kent,

I am assisting Rick Johnson with some work on the Panghirtung treatment plant. Please find attached a description of the process and a flow sheet outlining the same.

If you have any questions or need more information, please feel free to call or email me at gstang@clearwaterworld.com. Thanks,

Regards,

Gerald Stang

Pangnirtung Design Criteria

The attached process flow diagram outlines the process as discussed below. The Pangnirtung plant will deal with an Average Daily Flow (ADF) of 75,000 USGPD.

Influent	Effluent
BOD_5 = 500 mg/l	BOD_5 = 100 mg/l
TSS = 350 mg/l	TSS = 120 mg/l

The influent is dropped off into a truck dump and immediately pumped through a screen into a screened sewage tank. The screened sewage is pumped into an aerated equalization tank where it is continually mixed. The screenings are compacted for disposal.

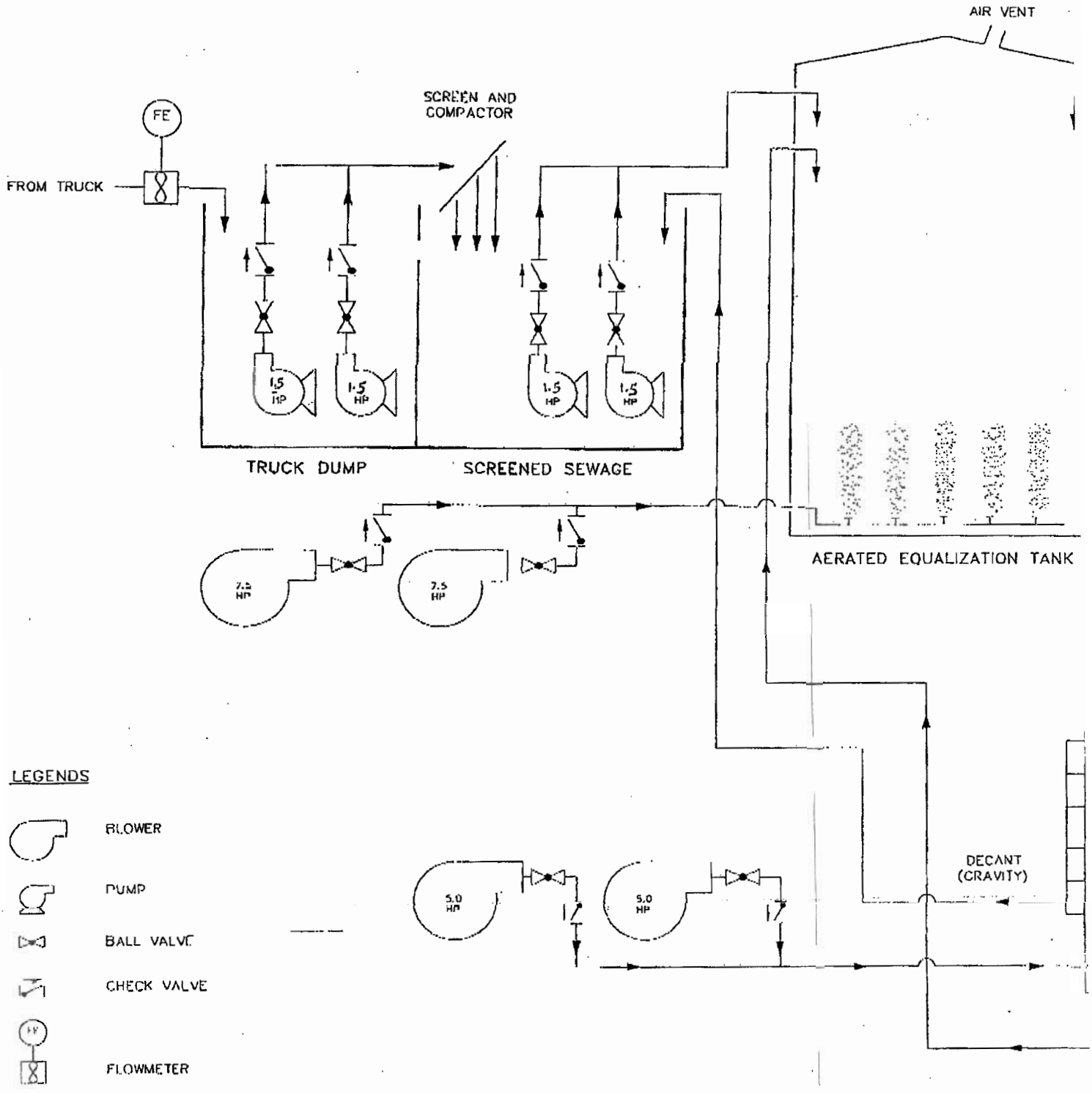
The equalization tank will be 25.18-ft diameter x 13.75-ft shell ht. With 500-mm freeboard, this is 45,100 USG. The total ADF of 75000 USGPD will be dropped off by trucks during an 8-hour day. During the day, the first 30,000 gallons will be treated. By the end of the day, the equalization tank will be near full (45,000 USG) and this will be treated over the next 12 hours. This provides an average flow to the GEO-FORM reactors of 3750 GPH over 20 hours. This gives 4 hours to ensure the flow equalization/pre-treatment tanks are empty before the next day's deliveries. The tank will be continually mixed at 140 scfm.

The well-mixed fluid is pumped out of the equalization tanks at a steady rate to the GEO-FORM reactors. We will treat the fluid with two separate treatment modules, each consisting of three, 5-ft GEO-FORMs and a two-hopper final clarifier. Each GEO-FORM module will be 13' H x 9' W x 18' L when assembled. The GEO-FORM reactors are rotating biological contacters that degrade the waste through bacterial action. The effluent from each reactor flows to a final

clarifying tank where the solids settle out, leaving the clean effluent ready for discharge. The settled sludge is pumped to a sludge digester tank.

The sludge digester is 16.78-ft diameter x 13.75-ft shell height. With 500-mm freeboard, this is 20,000 USG. The digester is aerated at 80scfm by a 5 hp blower to ensure good degradation of the sludge. The air is periodically turned off, allowing the solids to settle and the supernatant to be drained back to the screened sewage area.

The dewatered sludge will be bagged in an automatic sludge bagger for later disposal.



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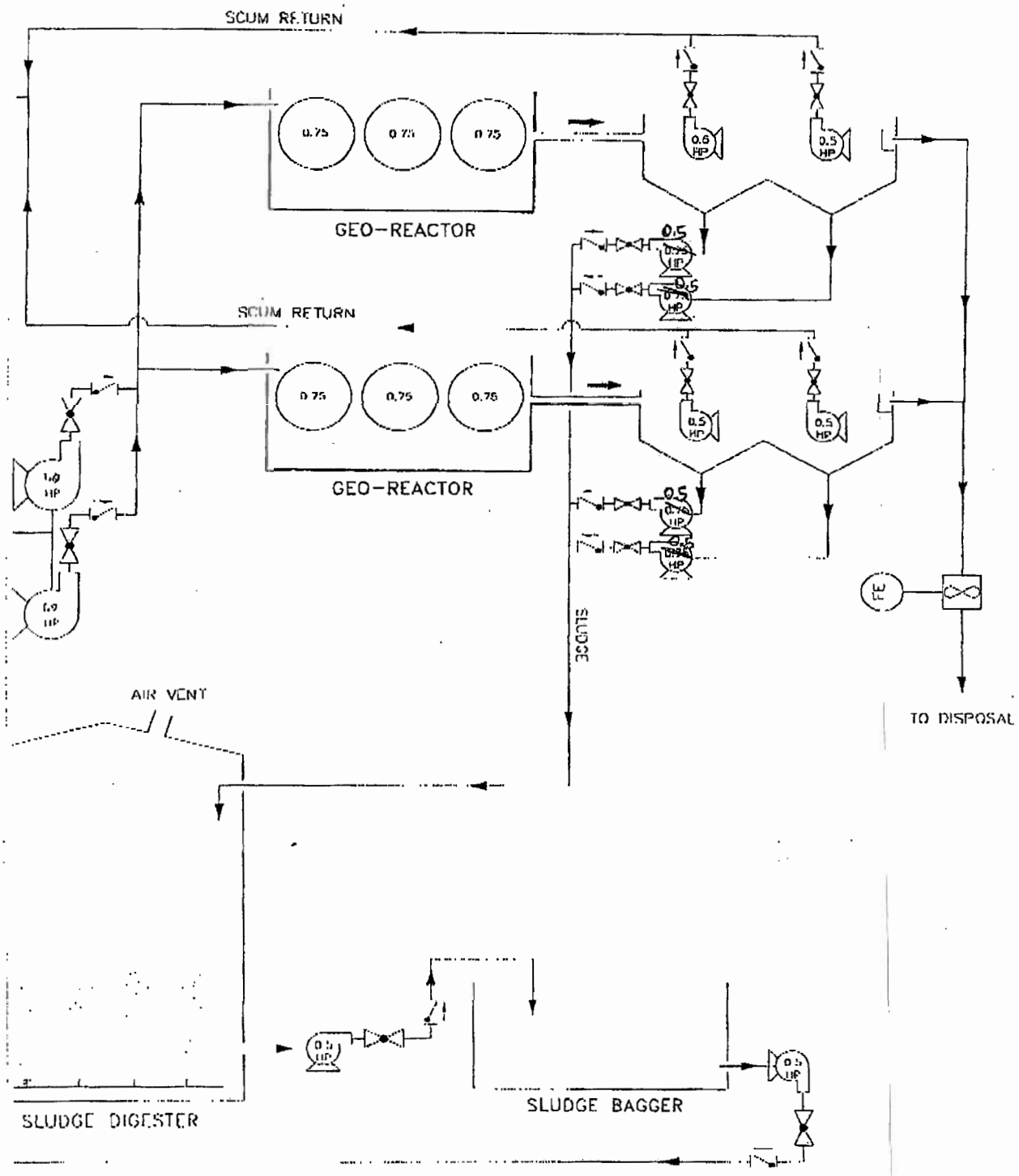
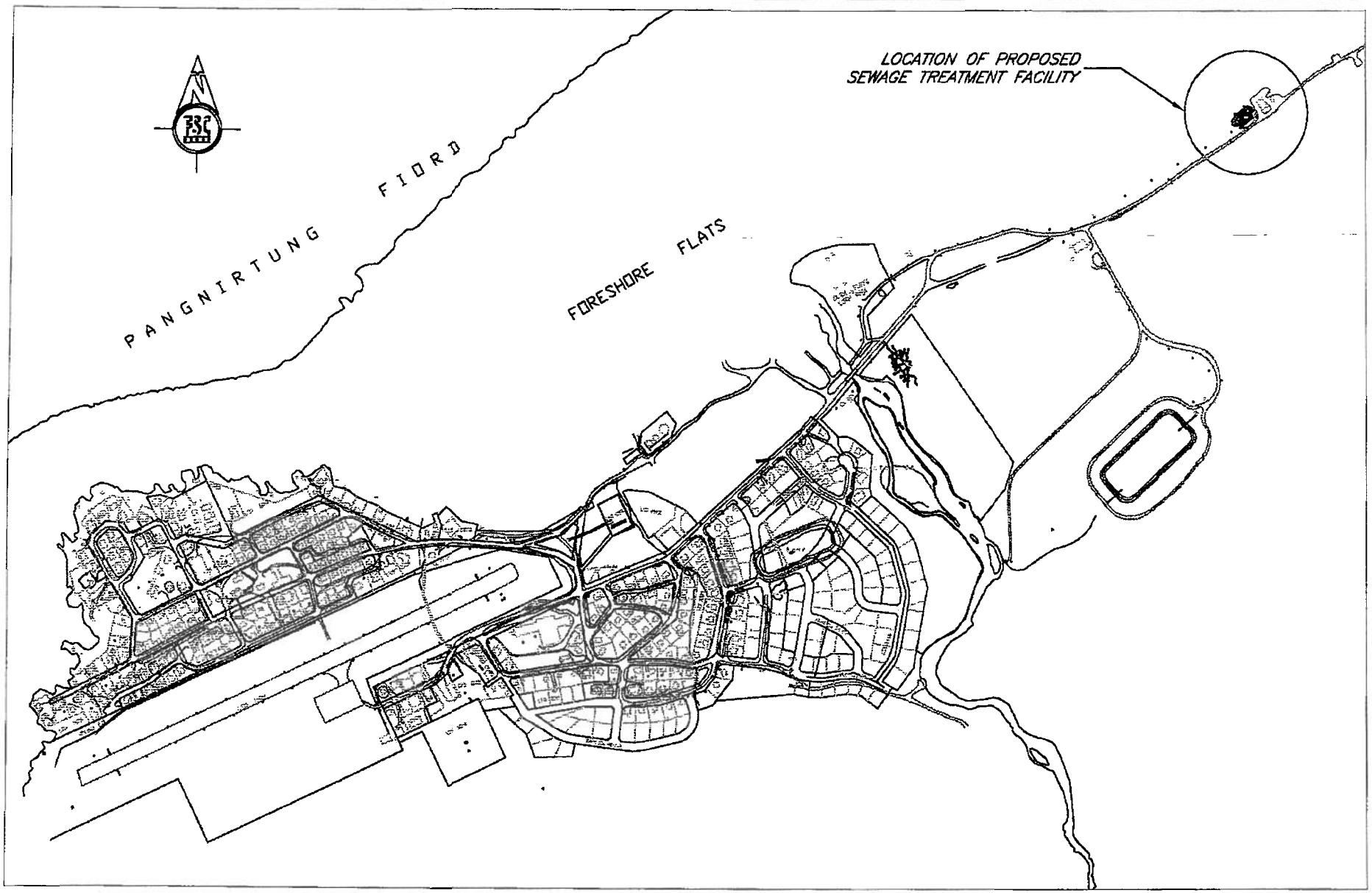


THE CLEARWATER CONFIDENTIAL TED, USED OR RIZED BY BCA	The Clearwater Group™	DRAWN JO DESIGN RJ CHECKED RJ APPROVED – DATE DEC. 17, 01 SCALE N.T.S.	PANGNIRTUNG BCA WASTE WATER TREATMENT PLANT PROCESS FLOW DIAGRAM (SO #6535)	DRAWING NO. 017271-02 REV –



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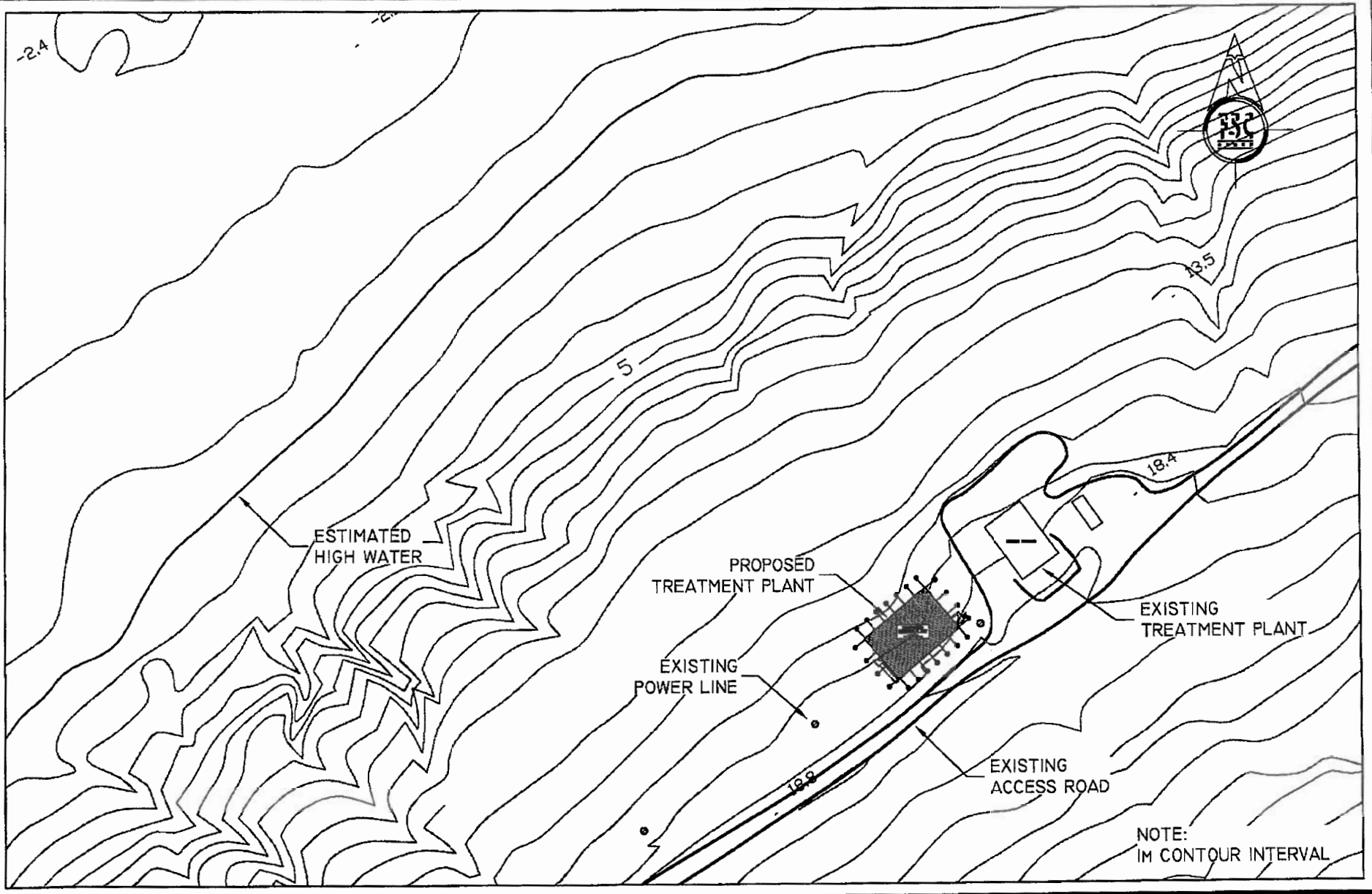
OVERALL SITE

PANGNIRTUNG SEWAGE TREATMENT PLANT

FIGURE NO.

1-1



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PROPOSED SITE

PANGNIRTUNG SEWAGE TREATMENT PLANT

FIGURE NO.

1-2